

# SUPPLEMENT.

## The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2582.—Vol. LV.

LONDON, SATURDAY, FEBRUARY 14, 1885.

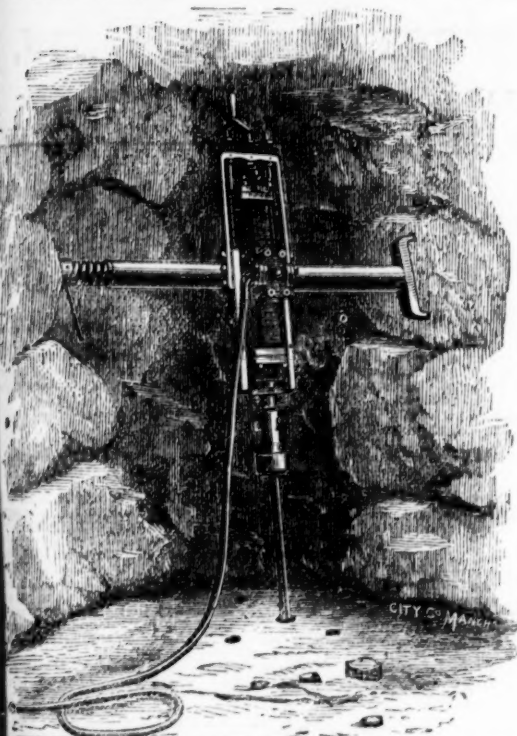
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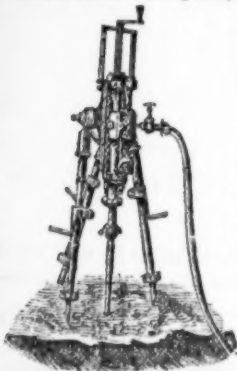
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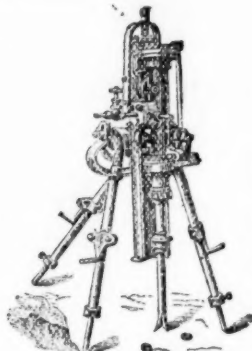
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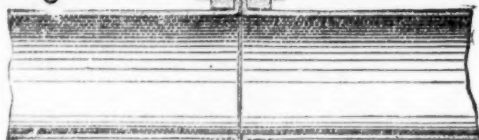
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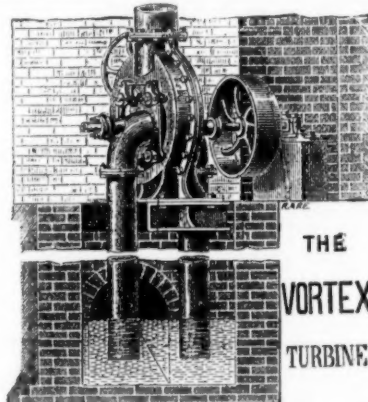
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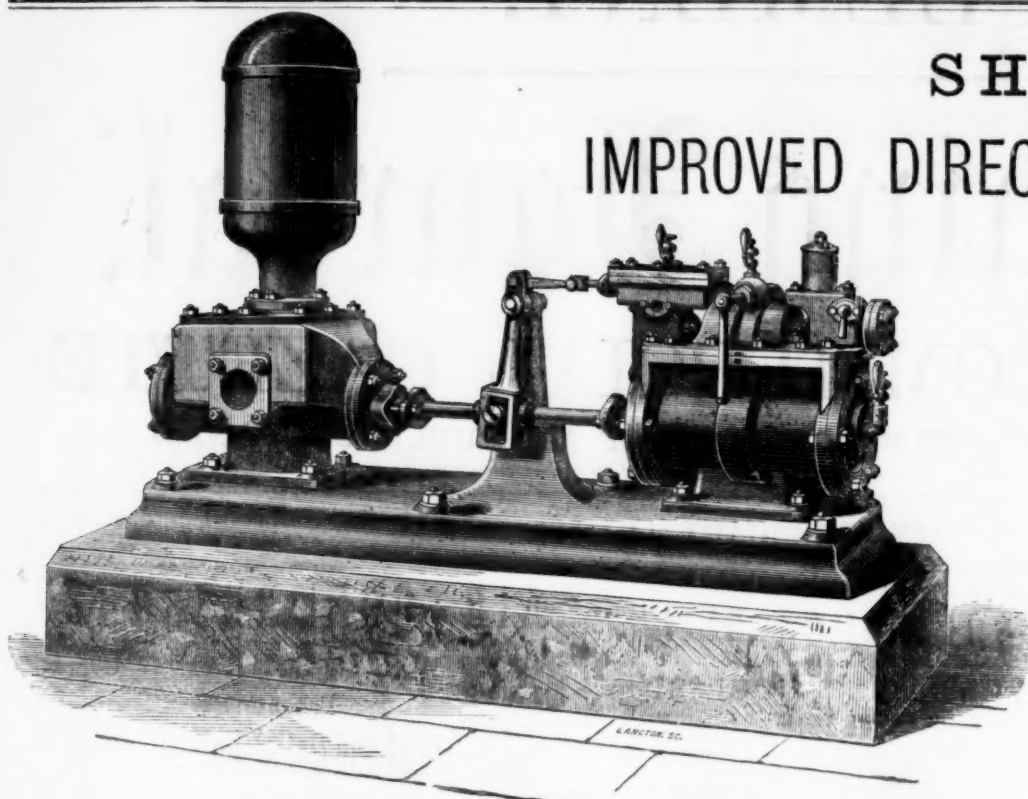
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Yours truly,

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Manchester, Sheffield, and Lincolnshire Railway—Steamship Department,  
Grimsby, April 10th, 1884.

DEAR SIR,—I have much pleasure in stating that after a trial of over nine months, and comparing it with other packings, I can confidently recommend your Asbestos Packing. It is especially valuable when high pressures are employed, as in cases where other packings have perished, owing to high temperatures, your packing has invariably stood well. I have also used it with complete success when a gland has heated with other packings, and also in cases of badly scored piston rods. I consider the results I have obtained by its use for our marine engines to have been in every way highly satisfactory.

Yours truly,

Mr. J. Bell. G. H. CLARKE, Sup. Engineer,  
Department of the Director of Navy Contracts,  
Admiralty, Whitehall, 20th June, 1884.

SIR,—I have to inform you that your tender has been accepted for Bell's Rolled Cloth Asbestos Packing to sample submitted:—Elastic core ... .. Square.  
... .. Round.  
To Mr. John Bell. JOHN COLLETT, Director of Navy Contracts.

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I am, dear Sir,

Yours faithfully,  
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Yours truly, W. SANTO CRIMP, C.E., F.G.S.

The Tamar and Kit Hill Granite Company (Limited),  
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I am, Sir, yours faithfully, W. J. CHALK, Assoc. M.Inst.C.E., Engineer and Manager.

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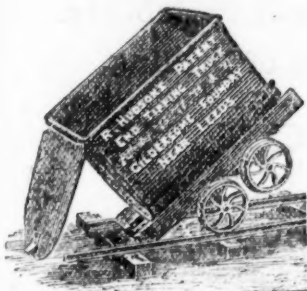
UPWARDS of 25,000 of these Trucks and Wagons have been supplied to the South African Diamond Mines; American, Spanish, Indian, and Welsh Gold, Silver, Copper, and Lead Mines; Indian and Brazilian Railways, and to Railway Contractors, Chemical Works, Brick Works, and Coal and Mineral Shippers, &c., &c., and can be made to lift off the underwork, to let down into the hold of a vessel, and easily replaced. They are also largely used in the Coal and other Mines in this country, and are the **LIGHTEST, STRONGEST, and most CAPACIOUS** made, infinitely stronger and lighter than wooden ones, and are all fitted with R. H.'s Patent "Rim" round top of wagons, requiring no rivets, and giving immense strength and rigidity. End and body plates are also joined on R. H.'s patent method, dispensing with angle-irons or corner plates.

Patented in Europe, America, Australia, India, and British South Africa, 1875, 1877, 1878, 1881, and 1883.

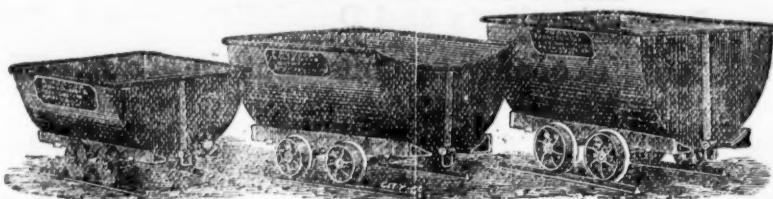
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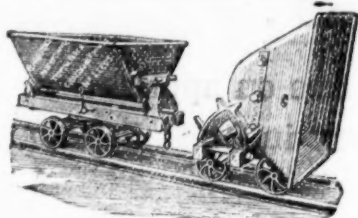
1.—PATENT STEEL END  
TIP WAGONS.



7.—PATENT STEEL MINING WAGONS.



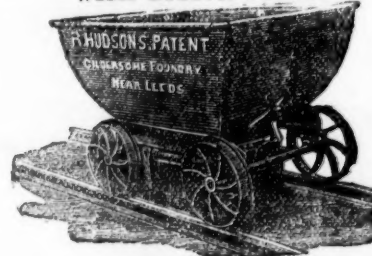
2.—PATENT UNIVERSAL TRIPLE-CENTRE  
STEEL TIPPING TRUCK,  
Will tip either SIDE or either END of rails.



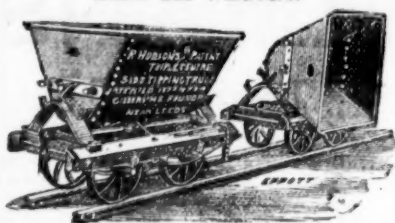
8.—PATENT DOUBLE-CENTRE STEEL  
SIDE TIP WAGONS,  
Will tip either side of Wagons.



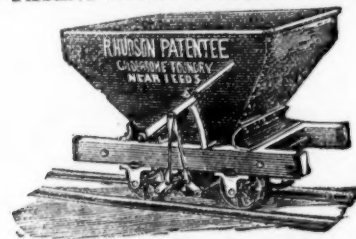
12.—PATENT STEEL HOPPER WAGON,  
WITH BOTTOM DOORS.



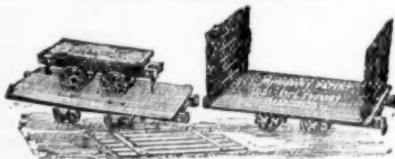
3.—PATENT TRIPLE-CENTRE STEEL  
SIDE TIP WAGONS.



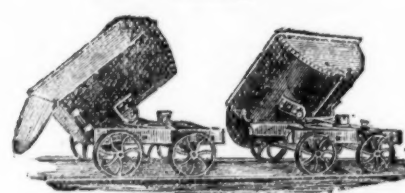
13.—PATENT STEEL HOPPER WAGON.



4.—PATENT STEEL PLATFORM OR  
SUGAR CANE WAGON.



9.—PATENT STEEL ALL-ROUND TIP  
WAGON.



14.—SELF-RIGHTING STEEL  
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(The "CATCH" can also be made SELF-  
ACTING if desired.)



15.—R. Hudson's Patent Steel Cages  
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17.—STEEL SELF-CONTAINED  
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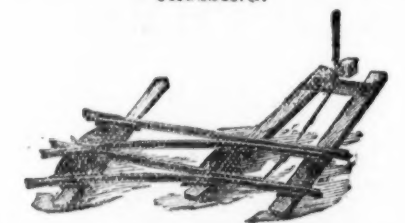


(Also made in CAST IRON for use where  
weight is not a consideration.)

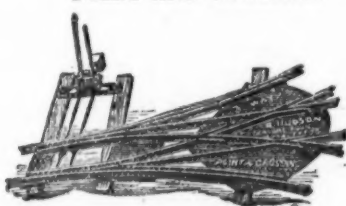
5.—PATENT STEEL CASK.  
As supplied to H.M. War Office for the late war in Egypt.  
DOUBLE the STRENGTH of ordinary Casks without any  
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(Made from 10 gals. capacity UPWARDS to any desired size.)



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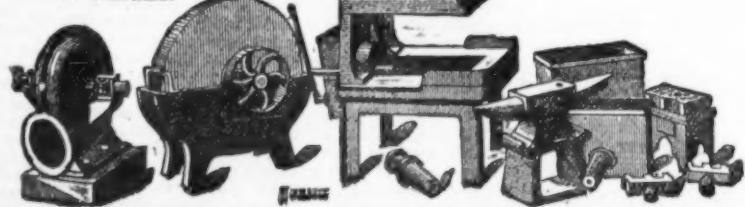
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No. 19.—PATENT STEEL CHARGING BARROW.  
DOUBLE the STRENGTH & much LIGHTER than ordinary Barrow



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APPLICATION.



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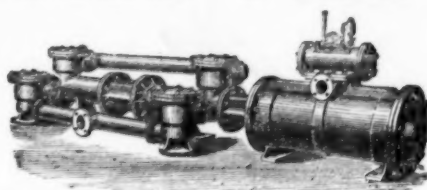
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**FATAL DYNAMITE EXPLOSION IN AN IRISH IRON FOUNDRY.**—On Saturday last an explosion of dynamite occurred in the iron foundry at Larne, county Antrim, by which Samuel Harbinson and William Higgins were instantly killed. The explosion was heard 2 or 3 miles distant. It appears that the two men named, together with Robert Agnew, left Larne during the previous afternoon, and proceeded to a disabled schooner, the Assiquibo, with the intention of bringing off some old metal. The Assiquibo entered Larne Harbour in 1874, having a cargo of dynamite. She was soon afterwards seized for debt, and the district inspector also summoned the consignee for importing a large quantity of dynamite without the usual license. The case at that time was returned for trial, and the cargo of dynamite was supposed to have been removed. Since 1874 the vessel has been in Larne Lough, having gradually drifted nearer the shore. When the three men boarded the vessel, on Friday, they removed part of a pump into their small boat. They then conveyed the material to the Larne Foundry, and were subsequently engaged in sledgeing it to pieces, when the dynamite exploded with terrific force. Two of them were literally blown to pieces, parts of their bodies being found at considerable distances from the scene of the explosion. The deceased were both married.

**LORD EDMOND FITZMAURICE**, writing from the Foreign Office on the 6th inst to the Manchester Chamber of Commerce, says he is directed by Lord Granville to send to the Chamber a copy of the declaration with Spain which was signed on Dec. 21, and has now been laid before the Cortes. Lord E. Fitzmaurice continues, "You will observe that it proves that the most-favoured nation treatment shall be granted to British trade with Spain as soon as the legislative measures specified are completed. Arrangement is also made for the negotiation of a definitive treaty. It is further contemplated that a subsidiary negotiation shall, if possible, ensue in connection with the tariff modifications to take place this year. As the Spanish tariff now stands, certain mixed wool, cotton, iron, and steel goods, and possibly a few other articles, are affected very seriously by the classification and rates of duty adopted in it. The object in view is, if possible, to afford immediate relief to those branches of British trade. Information for use in the time available has been already supplied to this office, but should you desire to supplement it your representations shall receive full attention. It is necessary, however, that they should be made as soon as possible. You will, as before announced, be duly consulted when the subsequent negotiations are about to be commenced."

**THE PETROLEUM TRADE IN PENNSYLVANIA.**—M. Lefevre, Consul-General of France in the United States, in a report upon the present state of the petroleum trade in that country, says that the average yield of oil in Pennsylvania alone has been 775,000,000 gallons for the last few years, and that there are now 20,000 different springs, each of which produces upon an average three barrels a day. The pipes and tubes connecting the wells with the reservoirs, &c., in which the oil is stored would be 5000 miles long if placed in a straight line, and it is estimated that the 1600 reservoirs contain 38,000,000 barrels of petroleum, which would be enough to form a lake more than 100 acres in extent and 14 ft. deep. There are also about 1500 miles of pipes which connect the Pennsylvania wells with the great commercial centres of Cleveland, Pittsburg, Buffalo, and New York, this being found a more economical mode of transport than the railway. Other conduits are being laid down to Philadelphia and Baltimore by the Standard Oil Company, which employs 100,000 workmen and uses daily 25,000 barrels of 40 gallons each, and 100,000 tins of five gallons each.



## Original Correspondence.

## GOLD MINING, AND ITS MANAGEMENT—No. XI.

SIR.—A letter in a late issue from "A Welsh Miner," and the reports of the proceedings and results of several gold mining companies that have lately appeared, show that the question of management is of the most vital importance to the success of gold mining operations. However much shareholders may be buoyed up with exaggerated statements of probable results during the preparatory stages of the development of mines the final test of absolute results from the crushing-mills, puddling-machines, or sluice-boxes has to be the answer. Elaborate reports nor sophistry of the most seductive kind will alter the broad naked truth of final results—the poetry and romance of the ethereal castles, built on the designs of enthusiastic amateurs, vanish into air under the test of real practical work.

Imaginary quartz reefs, many feet in thickness and miles in length, said to average several ounces of gold per ton, upon which the hopes of so many have been unsubstantially built, have under the test of real work dwindled down to thread-like veins of quartz, averaging only pennyweights of gold per ton instead of ounces. Thus has been rudely shattered the high born hopes of our sanguine shareholders and the veracity or judgment of those responsible for the reports and delusive promises of great results, on the faith of which so many were led to invest their capital. As a strong advocate of legitimate gold mining it has never been my object to damp the ardour of investors or speculators in an industry which, I unhesitatingly state, when properly conducted is the most profitable of any. My desire has always been to encourage mining investment, and to induce intelligent consideration and thoughtful investigation to be given to the merits of gold mining as a legitimate and profitable investment, when upon examination of the results it can be admitted that they have been and are now, where intelligently conducted, of the most satisfactory character. It should be remembered that it is not merely the fact that because anyone may have been in Australia or America, or lived on the gold fields, or even have been connected with or engaged in gold mining that he becomes an expert, or a good mining manager, or an authority upon the value of a mining property.

An efficient mining manager must be one who has been trained in the school of practical experience, and the best test of men's abilities is that of working poor mines at a profit. Forethought in designing of work, machinery, and appliances, economy in execution, and a thorough knowledge of details in connection with all classes of mining, are the essential qualifications necessary for a competent mining manager.

The best evidence of real practical work and profitable gold mining may be taken from the results of the industry in Victoria. From the Government Statistics the average yield of 20,000,000 tons of quartz has been only 10 dwts. 15 grs. per ton, and the general result of the entire annual production of gold, amounting to upwards of 3,000,000L. sterling, is about one-third paid in dividends. The primary object of practical mining men in Australia is to pay large dividends on small capitals, instead of insignificant or no dividends on large capitals. The overloading of mining companies with an imaginary, useless, and unproductive capital is only a delusion and a snare—a clog upon enterprise, and unsatisfactory in results.

A fairly good mine might be able to pay good dividends on a moderate capital of from 25,000L. to 50,000L., or even 100,000L.; but when handicapped with a useless or nominal dead-weight capital of 250,000L. to 500,000L. the dividends would be insignificant and unsatisfactory. The great success attendant on gold mining generally in Victoria has been the moderate but efficient capital of companies, judiciously and economically expended under local supervision of practical men, which in so many instances have given and are now producing such favourable results, as instanced by a few companies taken promiscuously from the present list of dividend mines for 1883:—

Name of company.	District.	No. of shares.	Limit of amount p. share.	Dividends paid.	Total cap. pd.
Acadia	Sandhurst	24,000	£1 0 0	£3 12 3	£22,200
Band of Hope	Ballarat	12,000	0 5 0	0 1 0	20,500
Black Horse	Egerton	10,000	2 0 0	1 5 6	68,000
Doyle's Reef	Kilmore	24,000	0 5 0	0 2 6	15,600
Ellersmere	Sandhurst	28,000	1 0 0	0 12 7	59,950
Grt. East. Hustler's	ditto	28,000	1 0 0	0 17 6	363,000
Grt. East. No. 1	ditto	28,000	1 0 0	0 3 0	194,600
Langridge	Kilmore	24,000	0 5 0	0 2 9	15,600
Long Tunnel	Wallallia	2,400	5 0 0	5 0 0	858,000
New Era	Castlemaine	24,000	1 0 0	0 1 8	32,800
North Johnsons	Sandhurst	22,000	1 0 0	0 0 9	69,100
Nor. Shenandoah	ditto	24,000	2 0 0	0 5 6	83,300
Old Chum	ditto	27,000	2 0 0	0 3 0	59,620
Pleasant Creek	Stawell	10,000	2 10 0	2 2 6	751,742
Queen's Birthday	Danby	8,000	1 2 6	1 2 6	207,000
Washington	Ballarat	12,000	0 10 0	0 3 3	25,420
United Hustler's	ditto	48,000	1 0 0	0 2 0	111,600
and Redan	Sandhurst	18,000	1 0 0	0 6 6	52,200
Dykes	Creswick	12,000	1 10 0	1 5 6	108,700
"Lone Hand (1884)"	ditto	12,000	1 0 0	0 11 1	165,000
Ristori	ditto	12,000	1 0 0	0 11 1	165,000
Total					£3,291,954

\* This company as also several others have also paid large amounts in royalties. Thus it will be seen that 20 gold mining companies, whose united capitals expended in the mines only amounts to 163,741L., have paid in dividends 3,291,954L., or repaying the capital about 20 times over, besides probably more than that in wages and expenses.

The perusal of the foregoing facts should of itself be sufficient to convince the most sceptical mind that gold mining in Australia is not of the risky or haphazard nature that many imagine it to be. There are also a number of mines worked by private owners, whose returns are not made public; the results from which are also very large. It will be seen from the above lists that from the very small amount of capital paid up in some of the companies that most of it was expended in the mines, and not wasted in extravagant or ornamental management.

If capitalists in England will but devote some of their attention to investment in Australian gold mining they will be well repaid, and materially increase the supply of new gold, which is wanted to revive trade and relieve the general depression now existing. There is an unlimited field for the profitable investment of capital and labour under judicious management.

THOMAS CORNISH, M.E.  
Author of "Our Gold Supply: Its Effects on Finance, Trade, Commerce, and Industries."

## COPPER MINES OF CHILI.

SIR.—The effects of the decline in the value of copper are painfully shown in the notice which has just been issued to the shareholders by the directors of the Panulcillo Copper Company. The profits at Chili for the six months ending December, 1884, are stated to have been 1400L. They go on to say—"Subject to examination and audit, the accounts for the year will exhibit a loss of 300L. after providing for interest on debentures (1600L.) and all London charges." In spite of this disastrous result the 4L. shares are quoted at over 2½. The average price of copper during 1884 was 52L. per ton. If the Panulcillo Company could earn last year barely sufficient to cover interest on debentures and London office charges, what will it do this year with copper below 50L. per ton? The other Chilean mining enterprises quoted on the London Stock Exchange—the Copiapo Company—seems to be doing much better than the Panulcillo Company.

For the five months ending November, 1884, the profits were reported as follows:—July, 1130L.; August, 1100L.; September, 1102L.; October, 1065L.; November, 940L.; total, 5337L., equal to 11,182L. per annum, or enough to give over 6 per cent. on the capital. The Copiapo Company has no debentures to absorb part of its profits; but, on the contrary, it owns a large agricultural estate, which yields much more than sufficient to cover directors' fees and London office charges. It is inexplicable why Copiapo shares, earning in the present bad times a dividend of 6 per cent., are quoted at only 2L. per share, or less than Panulcillo shares, which pay no dividend whatever. Were the holders of Panulcillo to exchange part of their shares for those of the Copiapo Company they might secure some return for their investment in Chilean mines, and should copper

improve in value ("a consummation most devoutly to be wished") the shares of both companies would rise in price. The present is a favourable moment for making this exchange.  
London, Feb. 11. A MINING INVESTOR.

## THE NEW POTOSI GOLD MINING COMPANY.

SIR.—I shall be glad if you will allow me through the medium of your Journal to draw the attention of shareholders to the present position of the company, and to suggest a plan followed by many other similar concerns, whereby the exact condition of affairs is seen from time to time. Now, according to the two last telegrams, about 1800 or 1900 ozs. have been produced during the month, which consisted, however, of only 18 or 19 working days.

Taking the price per ounce at the very modest computation of 37. 10s., we have a sum of 6300L. to 6650L. against monthly expense of 3500L. At Potosi the ore has averaged for many months over 2 ozs. to the ton, and assuming a month to mean 26 or 27 working days, we should then have a return of about 2700 ozs., equalling 9540L. We were assured by Mr. Provis a few weeks since that in future the working expenses for the month would be no more than 3500L. Allowing for freight, London expenses, and fluctuations, we have here a clear monthly profit of 5000L., or 60,000L. a year on a capital of 300,000L.

I hardly think that my fellow shareholders realise this cheering position, but they would do so I imagine if the directorate would suggest to Mr. Provis that with each fortnightly telegram he should add the exact surplus of receipts over expenditure. Now, the Mysore Gold Mining Company, which is hardly doing more than paying expenses, stand to-day at a quotation of 1L. 12s. 6d. to 1L. 15s. per 1L. share, whilst our own are at 12s. to 15s. What explanation is there of this? I enclose my card.  
Chiswick, Feb. 11. SHAREHOLDER.

## OSCAR GOLD—AN EXPLANATION WANTED.

SIR.—Early in December we were summoned to a meeting of shareholders to receive Capt. Daw, jun.'s, account of the mines, and he then showed us, as the result of 130 tons quartz crushed, ½ oz. to the ton; but since this meeting he found that nothing like the above-named quantity of quartz had been passed through the stamps, so that in taking off the surplus (over estimated at first), and calculating what gold was left upon the plates in the mercury, they gave us to suppose that an average of ½ oz. per ton was the net result. Since that meeting took place they have been, I believe, crushing continuously, but what a surprise to us all to find that up to the last report (see last Saturday's Journal) they had crushed 225 tons, and actually show a smaller quantity of gold than they gave us to understand they had taken from the first crushing of 130 tons, so that the last 90 to 100 tons appears to have given a result of less than nothing at all.

Under such strange circumstances as these I am sure many other shareholders beside myself are anxiously looking to Mr. Murchison for a speedy explanation, as many others no doubt did as I did doubt their holdings upon the faith of what was shown and told us by the directors and manager.  
Feb. 11. A SHAREHOLDER.

## GRASKOP No. 5.

SIR.—In your valuable paper of Saturday last the prospectus of Graskop No. 5 is printed. I have carefully read it, and find that it is a sub-company of the Balkis Company. The capital is to be 100,000L., of which it appears 10,000L. in cash and 65,000L. in 1L. ordinary shares goes to the vendor. Can you or any of your readers inform me who is the vendor in this case? Is it the Balkis Company, or have they given a valuable concession to others to make a pile by it?  
A SOUTH AMERICAN.

## QUEENSLAND MINING.

SIR.—The low price of tin quotations is having a decided influence on the quantity of the article produced in this district, and the annual output will be significantly less than of last year in consequence. The latter circumstance is not for the want of tin; on the contrary, there is every evidence of its abundance throughout, but speculators will not assist in developing a material whose price has so largely declined, and upon which there is no reliance. It simply means diverting the bone and sinew to other industries. Nevertheless, the resources of the district are so manifestly prolific that with time they must attract both attention and capital; this will most probably be practically declared when there is railway communication between here and the Port of Cairns. At the present moment there are in the district within an area of 20 miles seven tin-crushing machines and one smelting furnace, three of which are hung up, but one of these—that at Coolgarra—will resume operations in about a couple of months, saving and dressing appliances being in the course of erection. There is also a Pacific smelting apparatus at the Silver Camp. One of these machines in full operation is considered to be the completest in the colony, and it may be worth the while of some of your first-class mechanists to make their inventions known in these parts, as the day is by no means distant when late improvements for tin, silver, and copper will be in demand.

At this moment considerable agitation is exercising the mind of the miners. A payable gold field has been discovered by seven Chinamen in an unpeopled part of the country between the Johnston river and this town, midway more or less; about 25 miles from Mourilya Harbour and 30 from Herberton. The country may be said to be in its virgin state from here to the head of the Johnston river, and has been traversed but by very few; there are no settlements, and a dense scrub intervenes. A track from the declared payable site will be officially opened; in the meantime, miners are rushing to the locality from all quarters, taking no heed of the difficulties to be met with, each man having to "hump his drum," pack horses being useless in the scrub. The theory is that more payable discoveries will be made between the site defined and Herberton, and if this is proved it will be all that is required to make this the wealthiest district in Australia, seeing that it will be the only one that can produce gold, silver, copper, tin, antimony, &c., in large and inexhaustible quantities.

The rainy season is about commencing, which may for a month or two retard gold prospecting operations, the future particulars of which, together with those of tin, I shall, with your permission, make you fully acquainted.—Herberton, Dec. 22. EDWARD MYERS.

## THE ANGLO-AMERICAN TELEGRAPH COMPANY.

SIR.—From the notice of the voting at the adjourned meeting of the Anglo-American Telegraph Company published in the daily papers on Monday last it would appear as if all the shareholders had been invited to give their opinion upon the question brought forward at the meeting whether or not Mr. Cyrus W. Field should be requested to resign. Such, however, was not the case, no attempt having been made by me to obtain proxies from absent shareholders; but the question was unmistakably answered in the affirmative by the majority of the shareholders present at the meeting. The directors, as usual, demanded a poll in order to record the proxy votes of country shareholders, who had not heard the arguments and discussion, and, consequently, were not in a position to form an opinion. If they had been present probably not one of those votes would have been recorded against the resolution.

It is time that shareholders should take some interest in the management of their affairs, but from long habit they meekly sign the proxy form sent to them by their directors, thus putting a complete check upon any efforts which more active shareholders may think it advisable to take for the improvement of their property. In the case of the Anglo-American Company I took the precaution to give notice to the directors of my intention to move a resolution requesting the resignation of a particular member of the board, and asking that a copy of the resolution should be sent to each shareholder with the report, but this very fair proposal was declined on the ground that it was "not in the interest of the company." The shareholders present, however, after hearing the discussion thought otherwise. It is quite evident that meetings of shareholders are becoming unnecessary, as the opinion of those who take the trouble to attend them is systematically ignored. Much valuable time, and, no

doubt, inconvenience to the directors would be saved by the Chairman of the Anglo-American Telegraph and other companies printing and circulating an address, together with the intimation that the report and accounts had been unanimously adopted by the directors at a special board meeting called for that purpose, and consequently a meeting of shareholders was not requisite or desirable.

With regard to the number recorded as having voted at the poll at the meeting last week most of the shareholders had left the room, or were quite satisfied with the part they had taken in the moral demonstration against the action of the directors, and they felt that it was hopeless to overcome the mass of proxies behind which the directors had so ostentatiously entrenched themselves.  
16, Tokenhouse-yard, E.C. WILLIAM ABBOTT.

## AN OPPORTUNITY FOR ENTERPRISE.

SIR.—Knowing the interest Englishmen have in any information of practical value regarding opportunities for safe investment, I wish to direct your attention to the mountain region of North Carolina—a region which, having been but lately opened to the outside world by the completion of the Western North Carolina Railway, is comparatively little known. Although a mountain country, which abounds in peaks from 2500 ft. to 6700 ft. in elevation, the greater part of this section is capable of cultivation, and favourable to the raising of the grasses for the pasturage of any kind of stock. West of the Blue Ridge the valuable Kentucky blue grass (*Poa pratensis*) forms a volunteer crop wherever the forests are cleared from the land.

But it is of these forests that I wish most particularly to speak. In this same region, west of the Blue Ridge, embracing nearly or quite 6000 square miles, may be found in great profusion and highest excellence over 50 varieties of timber, useful in the arts and industries of the world. Among the most prominent of these may be mentioned the poplar, maple, white ash, black birch (sometimes called mountain mahogany), dogwood, cherry, beech, black walnut, yellow locust, oaks of several kinds, and black, yellow, white, and spruce pine, besides a host of other varieties, only waiting in the solitudes for the assistance of capital and energy to come forth and do their part.

The lands carrying this wealth of timber are in tracts ranging from 50 acres up to 100,000 acres in extent, much of it within easy reach of railroads, and all traversed in various directions by streams, almost any of which are water powers sufficient to convert the timber into merchantable lumber. These lands (not considering for a moment their possibilities in the way of mineral wealth) could be made to pay for themselves a dozen times over, by cutting and shipping the timber on them. When cleared they come nearer to filling the full list of the agricultural productions of the United States than any other section of our country.

The minerals of this region cannot be said to have been exploited to any great extent or with any degree of thoroughness; but a most cursory examination shows the existence of gold, silver, copper, iron ores of every description, and an inexhaustible quantity of mica, soapstone, talc, manganese, marbles of great beauty and variety, kaolin, and fire-clays. All this is found in a country that when cleared of its forests will afford agricultural productions sufficient to support a dense population.

With a little extension of our railway system the splendid coking coals of Eastern Kentucky and our unsurpassed iron ores can be brought into close connection. Then we will be enabled to rival the production of any ironmaking region in the world. Cannot England—that great mother of nations, whose children have always been identified with the opening of new countries, and letting light in on dark places—send some of her energetic sons to gauge the capabilities of this "Land of the Sky?"  
Salisbury, Jan. 28. RICHARD EAMES, Jun.

## FOREIGN MINING AND METALLURGY.

The French Iron Trade has shown continued weakness. Prices have become so low that Belgian competition has, at any rate, been rendered impossible. The Steelworks Company of France has offered to supply girders (for barracks about to be erected at Tonquin) at 4L. 14s. per ton, free at Paris. To explain this extremely low rate it should be stated that the girders are to be made at works owned by the company near Paris, and that the sacrifice proposed to be made will be partially compensated by the premium or bonus granted on exportation. After allowing, however, for all this the price at which the girders are to be delivered must be pronounced very low. The general position of the French steelworks has improved rather than otherwise. The Steelworks Company of France has taken 7000 tons of light rails for departmental railways at 5L. 16s. 9d. per ton delivered. This is equal to about 5L. 8s. per ton at the works. Another contract for 3000 tons of rails for the Department of the Isère has been let to the Châtillon and Commentry Company at 5L. 13s. 3d. per ton; and, finally, the Denain Company has taken a contract for 12,000 tons of rails required for the Economic Railways Company at 5L. 5s. 9d. per ton. About 620 tons of narrow-gauge railway are about to be constructed in France; half these new lines will be carried on in Brittany by the Western of France Railway Company, and the remaining half in the Department of the Var. The German iron trade has continued weak. At the same time, pig is being made in large quantities, the production of December, 1884, being estimated at 295,618 tons, as compared with 292,129 tons in December, 1883.

There is little or no improvement to report in the Belgian Iron Trade. The demand has continued restricted, and to make matters worse the prices at which such contracts as have been obtained have been taken is excessively low. An adjudication of 9200 tons of Vignoles steel rails have been announced for Feb. 25. This will afford a little employment for the Belgian steelworks, which begin to require fresh orders. A little work may possibly be also obtained in connection with the enlargement of the Northern Railway terminus at Brussels, as the cost of the operations proposed to be undertaken is estimated at 21,200L. Prices have been maintained, upon the whole, at about their former level; pig is considered to be a little firmer. A sale of 3000 tons of English casting pig is stated to have been concluded at Liège at 1L. 19s. 7d. per ton; the quotation generally current continues, however, to be 2L. per ton. Refining pig, hard iron, has been quoted upon the Belgian markets at 1L. 18s. 4d. per ton; ordinary pig has made 1L. 15s. per ton, and mixed ditto, 1L. 12s. per ton. No. 1 iron has made 4L. 10s. per ton on export account, and 4L. 12s. on home account. No. 2 has been quoted at 4L. 16s. per ton, and No. 3 at 5L. 2s. per ton. Girders have made 4L. 14s. to 4L. 18s. per ton. No. 2 plates have been quoted at 5L. 12s. per ton for export and 5L. 16s. per ton on home account. The current quotation for No. 3 has been 6L. 12s. per ton, while plates of commerce have brought 8L. 4s. per ton.

The Belgian Coal Trade, after having benefited rather materially from cold weather which prevailed at the close of January, has reverted to the condition in which it was found at the commencement of the year. At the same time the markets have been relieved to an appreciable extent of stock which would otherwise have weighed rather heavily upon them in the spring. As matters now stand the stocks of household coal on hand in almost every district, the Centre excepted, are reported to be small. Prices have been generally maintained upon the Belgian markets without variation; coking coal has, however, been disposed of with some difficulty. The number of trucks carrying coal and coke which passed over the Belgian State Railways in the week ending Feb. 1 was 19,321, as compared with 16,274 in the corresponding seven days of 1884. There is little change to notice in the German coal trade, prices having remained stationary. At the same time it should be observed that household coal has presented an indifferent tone, while coke has continued weak. The production of the Dortmund district in 1884 was 28,403,258 tons, while the deliveries for the year were 28,384,715 tons. In 1883 the production was 27,863,025 tons, and the deliveries of the year were 27,806,714 tons. It will be seen that both the production and the deliveries experienced a considerable increase last year as compared with 1883. The exports of Dortmund coal last year were 7,944,609 tons, as compared with 7,900,032 tons in 1883.



## TRANVAAL MINING MATTERS.

The following interesting letter is from the Special Correspondent of the *Financial News*, dated Graskop Farm, Graskop, S.A. (7172 ft. above the level of the sea), Jan. 10:—

My last letter was dated from Pretoria, since which I have journeyed to the Lydenburg Gold Fields. Pretoria is almost famine-stricken for want of all that the people need, which has to be brought from England. Over 1200 Cape wagons are half-way between the sea at Durban and Pretoria, unable to reach Pretoria because of the swollen rivers, there having been an unusual quantity of rain; and all the people are looking forward with impatience to the building of the Lorenzo-Marques Delagoa Bay Railway. As far as the actual necessities of life go, Pretoria can never need such, as it is the centre of one of the golden spots of the world, and is rich beyond measure in agricultural resources.

Every Boer in the Transvaal is laughing in his sleeve over the way they have misled and fooled Mr. Gladstone's Government through the Bechuana question. The Boers do not care for this section which lies in the middle of Africa; what they do care for is the Amatonga and Zulu country, giving them a sea frontage of several hundred miles. While the English troops are guarding Bechuanaaland all the energies of the Boers are engaged in seizing and measuring farms on the Indian Ocean, recovering St. Lucia Bay, and as soon as enough farms are seized and occupied by them the whole of the Boer seaboard, which will then include everything from Natal to the Portuguese line, south of Lorenzo-Marques (Delagoa Bay), will become a dependency of the South African Republic under the protection of Germany. This will effectually drive out of this portion of Africa all English manufactured goods, and give to the German manufacturers a monopoly—provided they control the Lorenzo-Marques Railway. The Boers expect as soon as this is accomplished to absorb or conquer Natal, in fact they claim that this was agreed to on the part of Lord Derby when the Boer deputation was in England.

The gold fields of Lydenburg have changed for the better since my last visit. The Transvaal Gold Exploration Company has about 40,000 acres, and was sold in England by Messrs. Edmund Escombe and David Benjamin, after being examined by Mr. Crutwell for Messrs. Brown and Adams. Mr. Crutwell's report was very favourable. The company sent down to take charge of these fields, a Mr. O'Donoghue, of the firm of Jardine, Matheson, and Co., the Rio Tinto owners. After two years' residence these engineers all agreed that they had a rich property. Large sums of money have been spent in erecting machinery, but no development work has been done whatever—not a shaft has been sunk. The machinery sent is practically useless. The pneumatic stamps are unfitted for the work. They have a 10-stamp California mill, which is fitted for its work, otherwise the whole expenditure has been lost. The freight alone for this useless machinery, which has been paid, amounts to over 14,000*l.* Over 70,000*l.* of good money has been actually thrown away. The 10-stamp mill has been erected at great cost on the only spot where it should not have been erected. There is no ore in sight and ready for the mill to crush which has not already been worked over two or more times by the diggers. The only useful or miner-like work which has been done on this property is now being done by Gardiner Williams, the California miner, who has recently been sent out by the company to supersede the inexperienced men who have hitherto controlled the affairs of the company in South Africa. Such fearful mismanagement has never before been seen, I venture to say. When the new ditch is done all the debris worked over stuff may be washed down to a low place in the flat. Below this flat, or depository, the 10-stamp mill should be erected, and the stuff then run through the mill. By this means only can this property be made to pay, and by this means the property is certain to pay; besides which, by washing all this debris down, the source of this debris will be ascertained, and the gold veins or reefs uncovered.

Gardiner Williams agrees with this. Williams is an uneducated miner from California, and is more or less puzzled as to the situation in England. He does not understand whether the company really desire to have the property developed into a mine or not. He finds here entirely new conditions, and not the regular narrow veins of California, but he has become convinced that at some time the source or true veins from which all this debris has been taken must be found. With the mills changed and enlarged, and the water utilised to wash the whole side hills down to a low level, and the whole mass put through the mill, he is confident in making the property a grand success, provided the people in England desire it. Williams says the Graskop has the only defined gold veins he knows of—that he has no question but that just as good exists on his property, and will be found when the broken-up material is washed down so as to uncover the veins. He considers that this debris, or broken-up material, is simply veins mined by Nature. I can safely predict that if Williams is left alone to work out the fortunes of the Transvaal Gold Exploration Company, he will, if provided with funds, do so successfully.

Graskop Farm—This farm, now the property of the Balkis Company, enjoys a higher reputation for gold than any other farm in the Transvaal, except Eersterling, which last was systematically worked with machinery until the great Kaffir war, when the miners had to fly for their lives, and the Kaffirs destroyed the buildings and machinery, or so much thereof as would burn. The Balkis Company has been in possession of the farm, Graskop, for about one year. In that time a great deal of practical work has been done, over 15 miles of ditches have been dug, a good reservoir has been constructed, dwelling houses have been erected, a 10-stamp mill of the California pattern has been erected, which is now in complete order, and ready to run. The water is used to bring down the broken up quartz to the mill floor, and large quantities are ready to be crushed in the mill. The mill has had a trial run, and works well and without vibration. It is fitted with boiler and engine, but a water-wheel is also being constructed, so that the mill can be run either by steam or water power.

A combination ditch is being constructed several miles long to concentrate all the water of the middle section of the farm into one ditch, to be used in equal thirds by Graskop Nos. 1, 2, and 3. No. 1 is the section retained by the Balkis Company, and Nos. 2 and 3 are the two sub-companies—Graskop No. 2 (Limited), and Graskop No. 3 (Limited). Both of these sub-companies are to give the Balkis Company about 40 per cent. royalty, and are at present under the charge of Messrs. Pascoe and Hamilton, both old and experienced mining engineers. Mr. Henry Mockford has charge of Graskop No. 1, for the Balkis Company. This company should congratulate itself on the possession of so faithful an officer as Harry Mockford, as he is generally called out here. Night and day he has worked for, and is working for, the shareholders of the Balkis Company. He has now everything in readiness to make a great success of No. 1. In simply preparing the ground he has extracted considerable gold. As soon as the company in England say the word the mill on No. 1 will start, and then the Balkis Company will be in receipt of weekly remittances of gold.

Hamilton has as good a section of Graskop as No. 1. Pascoe has not tried his ground yet. Pascoe is an original 1849 California man, and he looks on the attempts to get gold before the mine is opened, the ditches completed, and the hydraulics in position as "boy's play." Pascoe is hard at work, however, getting everything into shape. I have been shown the map dividing Graskop into eight sub-divisions, and am told that the company proposes to have eight sub-companies to work these sub-divisions. The plan is good, and will be successful, both for the sub-companies and for the parent company; but the Balkis Company do wrong in giving any sub-company so large a sub-division as 300 acres. No sub-company ought not to have more than 50 acres. At the companies' reefs the diggers have been ordered off by the Government. The Government award to the diggers was only 6000*l.* on the company's reefs, and 6000*l.* on Stanley's Reef and No. 1 ground. The diggers complain loudly at having to leave, and this is not to be wondered at when one sees the thousands and thousands of tons of quartz stacked up, with hardly a piece as large as a pigeon's egg in which gold is not visible. The Boer Government, however, has done no injustice to the diggers in granting a concession over the farm Graskop to the Balkis Company. The diggers were there, as diggers, allowed to take what gold they could,

but they went on the farm with the distinct understanding that the Government might remove them at a month's notice without compensation. The Government did better than that; they awarded them 14,000*l.*, which the Balkis Company had to pay.

P.S.—There are three farms now which may be recognised as certain to produce gold in payable quantities—Graskop, Eersterling, and Barrett's Berlin. I mention these three as certain, because they have been fully proven.

The Transvaal Gold should do so, but that depends on the management. Lisbon-Berlyn, which is entirely different from Barrett's Berlin, I shall write soon about. Graskop is undeniably the richest farm in the Lydenburg district; by rich I mean has the largest quantity of ore ready to be milled, which, even after being washed over by the old diggers, should yield more than 1 oz. per ton, while on the company's reef I predict the ore will yield 4 ozs. from the surface, and be richer below.

## THE AUSTRALIAN AGRICULTURAL COMPANY.

The following report on the affairs of this company will be submitted to the meeting on Feb. 17. The net revenue earned in 1884 may be taken at somewhat more than 113,500*l.* The amount therefore available for distribution as on Dec. 31 last, after charging income-tax (903*l.*), interest on debentures (2625*l.*), and bringing in an unappropriated balance of 1815*l.*, was approximately 111,700*l.*, and, though it is subject to a write off for wear and tear, the directors feel fully justified in recommending a first or interim dividend of 50s. per share free of income tax, the warrants for which may be issued on Feb. 20. Till the accounts for the whole year are received, the separate out-turn for each department cannot be given, but those which are to hand and record transactions up to Oct. 31, 1884, show that the increase of more than 13,000*l.* over the revenue of 1883 was mainly due to sales of land, the total net receipts of the land department in the first 10 months in the year having exceeded 24,000*l.* This large revenue, the largest ever earned by the company, could not have been realised under circumstances wholly unfavourable, and the correspondence shows a large and profitable coal trade maintained without interruption throughout the year, and an active demand for land, but it also shows that the operations in the stock department were carried on under great difficulty owing to the want of rain and the constant apprehension that the drought which prevailed in great severity in the western districts of New South Wales would extend to Warrah. This necessarily led to a contraction of transactions and to forced sales of precaution, which mean sales at unsatisfactory prices. In the superintendent's review of 1883, he was able to report that "the weather in that year could hardly have been more genial," but his reference to 1884 will speak of constant embarrassment caused by apprehension of such a continued want of rain as to amount to a drought. Owing, however, to the large clip of 1883, which realised upwards of 31,000*l.* net, and forms part of the revenue of 1884, it is not improbable that the total net outturn of the stock department will prove to have been nearly as large as it was in 1883, but it ought to have been from 10,000*l.* to 15,000*l.* better, and if the season had been propitious, there is no doubt that it would have been so. In spite, however, of this drawback, and this narrow escape from disaster, the actual out-turn of the year must be regarded as a great success, and as it affords conclusive evidence of the energy, ability, and judgment with which the company's affairs are conducted, the directors anticipate the cordial approval by the shareholders of the proposal announced in the advertisement to appropriate a sum not exceeding 2000*l.* to the officers in the company's London and Colonial establishments in recognition of the success of their services. They recommend that the scale of distribution be left to their discretion. Although reference in detail to the transactions of the past year must be postponed, there are two which may be noticed. The company's property, known as Platt's estate, which is situated at a short distance from Newcastle, comprises 2000 acres, and was purchased for 6000*l.* in 1839, is coming into demand. Fifty acres have been sold to the Government for 4000*l.* as the site for a public hospital, and the money has been received; 17 acres have also been sold to private individuals as sites for villa residences at an average price of about 124*l.* per acre. At Newcastle proper the sales up to Oct. 31 covered 44 acres, which realised rather more than 3110*l.* per acre. The special outlay up to the same date, which is not included in the revenue account, amounted to about 7200*l.*—for a new locomotive 2400*l.*, and for improvements at the Newcastle wharf, including dredging and piling, 4800*l.* The total amount of such special outlay, or a substantial portion, will have to be provided for by a write-off from the total available balance of 111,700*l.* As to the future, in which the current year occupies the front rank, there are many matters of great interest which require a brief notice. The current year makes a bad start with a smaller, and, in consequence of the season, an ill-grown clip, and without any sign of recovery in the London wool market; the latest telegram also (Jan. 31) reports the weather to be "dry and parching." But there was at the date of last postal advices (Dec. 12) abundance of food and water both at Warrah and Gloucester, and Mr. Gregson anticipated no scarcity during the present summer. On the whole the prospects of the current year are good. In the stock department a large turnover between sales and purchases may be anticipated, and as regards the coal trade no unfavourable change is probable, for the association among the coal companies is still in force, and the price of coal (11s. per ton) is maintained; the demand is, in fact, in excess of the supply, and under these circumstances the commencement of work by three new collieries, which are expected to be completed in 1886, affords no ground of apprehension. The company's claim for the large block of land at Newcastle (36 acres) taken by the Government for a railway station is still unsettled, but the directors do not anticipate an unfair award by the arbitrators to whom the valuation will be referred. The amount claimed by Mr. Gregson is, in round numbers, 118,000*l.*, distributed as follows:—For the surface, 25,000*l.*, for the underlying coal 34,000*l.*, for severance of surface 6000*l.*, and for severance of minerals 53,000*l.*, and, in the opinion of the directors, it is not unreasonable. The survey of the line of the East Coast Railway was expected to be finished at the end of last year. The latest information is that a new route, diverting the line from the harbour to the neighbourhood of Stroud was being examined. Further information on this subject at an early date is promised. A bore-hole is being put down near the harbour of Newcastle in search of a deep seam which was reached by boring many years ago at the site of the old D Pit. It is locally known as the fiery seam, owing to the escape of an explosive gas in the bore-hole, but it is deemed not improbable that at the spot now selected, which is some two miles from the D Pit, the seam may be of purer quality and greater thickness. At the last advices, dated Dec. 12, the boring had reached a depth of 569 ft. without finding coal. The extreme limit which the directors have authorised pending reference to Mr. Armstrong is 550 ft.

For long years after the gold fever had subsided wretched buildings might be seen alongside of palatial banks, and other such edifices in Melbourne, the explanation being that the title was bad. The sites had been bought in the flush days of gold finding by successful diggers, who had disappeared, and could not be found, and people were consequently afraid of building on the land. The Duke of Westminster of Sydney, New South Wales, is Sir Daniel Cooper, Bart., who resides in England. In Melbourne there is no very large proprietor. A gentleman, of the rather ominous name of Kite, at one time owned considerable real estate there, notably the Theatre Royal and restaurant adjoining, as at the Gaiety, but in an evil hour Mr. Kite, like so many Melbourneans, "went in for mining with disastrous results. It was at the restaurant above alluded to that Spiers and Pond first rose to fame, albeit they began in a much smaller place.—*Land Agents' Record.*

An explosion has occurred in the Vale Colliery, near New Glasgow, Nova Scotia. Three bodies have been recovered, and nine other persons are supposed to have perished.

## THE ENGLISH AND AUSTRALIAN COPPER COMPANY.

The annual report to June 30 last, to be presented to the meeting on Feb. 19, states that the gross quantity of ore, regulus, and precipitate received from various mines from July 1, 1883, to June 30, 1884, has been as follows:—

	1883-84.	1882-83.
Purchases at Port Adelaide.	Tons c. qr.	Tons c. qr.
Ore .....	3214 15 0	3650 11 2
Regulus and furnace stuff .....	7 2 1	—
Precipitate, &c. ....	0 12 0	0 5 0

Total .....

Purchases at Newcastle.

Ore .....

Total .....

The quantity of ore, regulus, and precipitate smelted at the Port Adelaide Smelting Works from July 1, 1883, to June 30, 1884, was—2493 tons 15 cwt. 3 qrs.; from 1882 to 1883, 1593 tons 16 cwt. And smelted at the Newcastle Smelting Works during the same period, 3184 tons, and 6605 tons 13 cwt. in 1882-83. The quantity of copper made at the Port Adelaide Smelting Works from July 1, 1883, to June 30, 1884, was—615 tons 14 cwt. 3 qrs. 5 lbs. and 361 tons 15 cwt. 0 qr. 13 lbs. in 1882-83, and the quantity of copper made at the Newcastle Smelting Works during the same period was—552 tons 5 cwt. 2 qrs. 13 lbs., and 1175 tons 13 cwt. 1 qr. 24 lbs. in 1882-83.

The quantity of copper shipped from and sold in Australia during the year ending June 30 last has been—

	1883-84.	1882-83.
Tons c. q. lb.	Tons c. q. lb.	
Copper shipped from South Australia .....	615 14 3 5	360 12 2 25
Copper sold in South Australia .....	0 13 0 0	1 7 1 0

Copper shipped from Newcastle .....

Copper delivered in Newcastle in return for ore .....

Copper sold in Newcastle .....

Supplies of Ore.—These show a decrease of 2417 tons 12 cwt. 1 qr. as compared with the supplies of the previous year. This is partly attributable to the low price of copper having rendered it necessary for many mines to reduce or suspend their operations, and partly to local circumstances. Some small supplies have been received from New Zealand during the year.

Copper Market.—At the time of the last annual meeting, on Feb. 21, 1884, Burra copper was quoted at 65*l.* per ton; in March it fell to 62*l.* per ton; in June it fell to 60*l.* per ton; in November it fell to 58*l.* per ton; in December it fell to 56*l.* per ton; it is now quoted at 57*l.* per ton.

The course of the copper market during the year has been one of continued decline, until prices have reached the lowest point ever known in the history of this metal. Like the previous year the chief cause of this decline has been the enormous supplies from the United States, which show an increase of nearly 8000 tons to England and 6000 tons to France and other European ports over the previous year. Although the market has had to deal with these largely increased supplies, and been depressed in values thereby, it is a remarkable fact that consumption of copper has increased (stimulated probably by the low prices), so as to cause a reduction of the stocks in warehouse here and in France on Jan. 1, 1885, of over 3500 tons as compared with Jan. 1, 1884.

Wharf.—The earnings of the wharf this year continue to be satisfactory, and fully bear out the remarks in the report of the previous year.

The profit and loss account for the year ending June 30 shows a balance at the debit of 3885*l.* 16s. 1d., from which has to be deducted 101*l.* 11s. 4d. balance on July 1, 1883, leaving 3784*l.* 4s. 9d. at debit of general profit and loss account. Of this amount the directors propose to charge 2600*l.* to the reserve fund, and carry forward the remaining balance of 1184*l.* 4s. 9d. The reserve fund stands at 8600*l.*

The following directors retire by rotation—Mr. R. A. Routh and Mr. J. R. Frewer, who being eligible offer themselves for re-election.

## COMMERCIAL FAILURES.

The number of failures in England and Wales gazetted during the week ending Saturday, Feb. 7, was 75. The number in the corresponding week of last year was 62, showing an increase of 13, being a net decrease in 1885, to date, of 250.

The failures were distributed amongst the following trades, and, for comparison, we give the number in each in the corresponding weeks in 1883 and 1884:—

	1885.	1884.	1883.
Building trades .....	7	5	24
Chemists and druggists .....	1	—	1
Coal and mining trades .....	—	1	4
Corn and cattle trades .....	1	2	2
Drapery, silk, and woollen trades .....	8	4	18
Earthenware trades .....	1	—	4
Farmers .....	3	3	15
Furniture and upholstery trades .....	1	2	4
Grocery and provision trades .....	12	9	44
Hardware and metal trades .....	2	1	4
Iron and steel trades .....	6	5	7
Jewellery and fancy trades .....	2	4	6
Leather and coach trades .....	1	3	9
Merchants, brokers, and agents .....	5	8	24
Printing and stationery trades .....	3	3	1
Wine, spirit, and beer trades .....	14	8	28
Miscellaneous .....	8	6	21

Totals for England and Wales .....

Scotland .....

Ireland .....

Totals for United Kingdom .....

The number of Bills of Sale published in England and Wales for the week ending Feb. 7 was 245. The number in the corresponding week of last year was 256, showing a decrease of 11, being a net decrease in 1885, to date, of 63. The number published in Ireland for the same week was 22. The number in the corresponding week of last year was 12, showing an increase of 10, being a net decrease in 1885, to date, of 33.—*Kemp's Mercantile Gazette.*

Mr JOHN E. PERRY, of Wolverhampton, writes:—It is a matter of surprise to myself and many others, having business connections in South Wales that there is no central exchange for the staple trades of the district. Either buying or selling at the present time in the district involves lengthy journeys to and from the different works, which means, of course, great expense and loss of time. In this, as in most other iron districts, buyers and sellers meet one day in each week (Thursday at the Exchange in Birmingham), when everybody has the opportunity of seeing everybody else, contracts are arranged, and differences and disputes which would otherwise involve interminable correspondence are settled. One cannot conceive how the business of the district would now be carried on without the weekly meeting on 'Change, and one can only guess at the unnecessary business friction in South Wales which would be done away with if the like plan were carried out there. Cardiff seems to me the natural centre of the South Wales district, and if you, Sir, will open your columns for expressions of opinion on the subject, I feel sure the leading men of Cardiff will recognise what an advantage the Iron Trades' Exchange would be, both to the town and the district. It would probably be well at the outset to arrange only for monthly or fortnightly meetings, but the advantages would quickly become so obvious that I have no doubt weekly meetings would soon be adopted.

The official return of rough and uncut diamonds exported from the Kimberley division of the Cape of Good Hope during November, 1884, states that their weight in carats was 212,098 11-16ths, and their declared value 246,855*l.*



## RATING OF MACHINERY AND PLANT.

The case of the Tye Boiler Works Company, recently heard before the Durham Quarter Session, has once more brought to the attention of the public the much vexed question of the rating of machinery. Strictly speaking, it is incorrect to talk of the rating of machinery, for, as will be shown hereafter, machinery considered by itself, and apart from its erection in a building, is not the subject of rating. A punching or drilling machine standing for sale in a warehouse is a mere chattel, and is no more rateable than a sewing machine similarly exposed for sale. The subject is, however, popularly treated under this title, and the phrase may be allowed to stand as long as it leads to no misapprehension. The poor-rate dates from the reign of Elizabeth. It was established by a statute, the 43 Eliz. c. 2, under which the inhabitants, vicar, and other occupiers of lands, houses, tithes, &c., were to be taxed for the relief of the poor. In 1633, some 30 years after the Act above mentioned, it was decided by the judges, that upon the true construction of the Act the occupiers of property within a parish were to be taxed according to their visible estates, real and personal (Sir Anthony Early's case 2 Bulstrode, 354). It seems, however, that there must have been much practical difficulty in assessing personal property; and in many parishes the practice fell into disuse, or a custom arose whereby it was exempted from rating. Still it was rateable until 1840, when a temporary Act was passed exempting the profits of stock-in-trade from being assessed to the relief of the poor. It is to be observed, however, that personal property in England is only exempted from rating by the Act of the Legislature which from year to year renews the Act of 1840, and that the now existing exemption will expire on Dec. 31 in this year, unless Parliament again includes the 3 and 4 Vict., c. 89 in the Annual Expiring Laws Continuance Act. Had all personal property continued the subject of rating, the question as to the rating of machinery might not have come before the public in its present form. At the same time it is hardly correct to say that the rating of machinery dates from 1840. In several cases which were decided before that year the Courts had held that buildings with machinery ought to be assessed at their value as enhanced by the machinery attached to or erected in them. And it will be shown hereafter that the Courts, in holding that machinery must be taken into account in assessing the value of premises to the poor rate, have so done—not because of the character of the machinery, which, in many cases remains personal property—but because of the increased value which its presence gives to the premises in which it is erected. To the non-legal mind this is, no doubt, a subtle distinction, and it must be admitted that it is difficult to explain. Why should a factory, in which, say, a large number of sewing machines are driven by steam-power, be rated at its value with the sewing machines, when a tailor's shop is rated without the sewing machine, which is in daily use by the occupier? The following observations may help to make clear the principle upon which the value of the machines is taken into account in the one case and not in the other. It is necessary in so doing briefly to refer to the principal decisions since 1840, and this we propose to do in this or a subsequent article. In the Queen v. the Southampton Dock Company (1851), 20 L. J., M. C., 155, the question was raised with reference to certain fixed plant, consisting of cranes, steam-engines, shears, derricks, dolphins, and other like ponderous machinery. These were attached to the freehold, and were stated by the sessions to be essential to the business of the company. They were, however, capable of being detached as easily, and with as little injury to the freehold as tenants' fixtures put up for the purposes of trade and business, and usually valued as between incoming and outgoing tenants. The Court held that the property ought to be assessed according to its existing value, as combined with the machinery, without considering whether the machinery was personal property, or had been so attached as to become part of the freehold. Had the machinery become part of the freehold, there could have been no question, and his case must, therefore, be taken to decide that when machinery is attached to a building for purposes of trade, the building must be rated at its value taken with the machinery; although the machinery is personal property in the sense that if it had been erected by a tenant he would have had the right to remove it at the end of his term. The reasons for the decision will be found better stated in later cases; but it will be seen that the gist of it is that a building must be rated for the purpose to which it is applied, together with everything in the building, which must remain permanently connected with it so long as the premises are used for that purpose. The same principle was affirmed in The Queen v. The North Staffordshire Railway Company (1860), 30 L. J., M. C. 68. There it was stated in the special case, that in order to work the line of railway properly it was necessary for the company to provide, in addition to the rolling stock, turn-tables, cranes, weighing machines, stationary steam-engines, lathe, electric telegraph and apparatus, office and station furniture, and gasworks used for supplying the stations with gas. It was held that these articles were divisible into three classes: 1. Things movable, such as office and station furniture.—2. Things so attached to the freehold as to become part of it.—3. Things which, though capable of being removed, were yet so far attached as to be intended to remain permanently connected with the railway or the premises used with it, and to remain permanent appendages to it, as essential to its working. About the first and second of these classes there was no difficulty; but with regard to the third, it was held that articles included in it must be taken into account in assessing the premises to which they were attached. In each of the foregoing cases it will be observed that the principle underlying the decision was—that the machinery was essential to the existence of the undertaking, and that the premises used for the purposes of the undertaking derived their distinctive character from such machinery. Thus gasworks would not be gasworks without machinery for making gas, though a dwelling house would be such without the furniture which is contained in it. In Reg. v. Lee, L. R. 1 Q. B. 241, 1866, the Phoenix Gas Company were held to be assessable for their premises without making any deduction from the yearly value in respect of retorts, purifiers, boilers, steam-engine, gas-holders, and tenant fixtures, such as pumps and exhausters. All of these were absolutely necessary to the manufacture of gas, which was the purpose of the undertaking; they were permanent appendages, essential to its existence as gasworks, and it was immaterial that they were capable of being removed. Pausing here for a moment, the reader must be reminded that it is a well-established principle of rating that premises must be rated, assuming them to be used in the same way and for the same purpose as they are—in fact, used by the actual occupier. Thus, a dwelling-house must be rated as such, although it might if converted into a shop be of greater value. So a public-house must be rated as a public-house, though the licensee which the occupier holds is not itself rateable, and though the premises, apart from the license, might be of smaller value. It is hardly a step in the reasoning to say that gasworks must be rated as gasworks, though the several things co-existing to make the premises gasworks are not all rateable *per se*. In rating gasworks or similar undertakings the foregoing cases show that everything which is a permanent appendage of the undertaking, while the premises are used for the purpose of the undertaking, must be considered as contributing, so to speak, to give the undertaking its distinctive character, and must therefore be taken into consideration in assessing the undertaking as gasworks, or as the case may be. If no other case had been decided after the three already mentioned there would probably never have been any question left to discuss now. But in 1867, Reg. v. Halstead, 32 J., p. 118, came before the Court of Queen's Bench, and seemed to unsettle everything. In that case it appeared that in certain silk manufactories which were assessed to the poor rate machines were driven by water and steam power, and there was a water-wheel and steam-engine which communicated motive power, by means of main shafting and driving gear, to each floor on which the silk machines stood. The machines were fixed to the floor by means of iron screws, which were used only for the purpose of steadying the machines when in use, as they were slighter than those used in similar factories. It was held that,

though the steam and water power and main shafting were rateable, yet the machines were not to be included in the rateable value. It is not easy to reconcile this decision with the previous case; and, indeed, it may be doubted whether it can be so reconciled. It must not be forgotten, however, that the Court had to decide upon facts found by the sessions, and stated in the form of a special case, and that the sessions had found as follows:—"The evidence is not sufficient to satisfy the Court (of Quarter Sessions) that the machines sought to be rated are so essential to the use of the fixed motive power, or the freehold, as to make the machines rateable property." This finding was held to conclude the case, and may possibly explain the decision; and if it does not, at all events, it does not follow from the decision that if the sessions had found the machines to be essential appendages of a silk factory, while the premises were used as such, the Court would not have held the principle of the previous decision to apply in assessing the value of the silk factories. If Reg. v. Halstead is to be regarded as deciding anything differing from this principle, all that can be said is that, in the light of more recent decisions, it is no longer law.

ANDREW KNOWLES AND SONS (Limited).—The directors of the above company have this week issued their 11th annual report. The total gross profits shown by the balance-sheets for the last year's working is 40,179l. 13s. 2d., with which it is proposed to deal as follows:—To write off preliminary expenses, 1372l. 16s. 3d.; one year's interest at 5 per cent. on the reserve fund, 165l. 8s. To pay to debenture redemption fund, as per agreement, the following amounts:—First half-year's interest on bonds (less income tax), 12,239l. 11s. 8d.; second ditto, 12,161l. 9s. 1d.; amount previously written off preliminary expenses, 627l. 3s. 9d.; total, 25,028l. 4s. 6d. One year's interest on amount paid in advance of calls, 719l. 8s. 1d.; dividend at the rate of 1½ per cent., 9750l.; balance to next year's account, 3143l. 16s. 4d. The reserve fund will then stand at 3473l. 8s. 7d., and the preliminary expenses will be now extinguished. The scheme for dealing with the debenture debt of the company has been embodied in an agreement which has been signed on behalf of the company and by all the debenture-holders. In accordance with this agreement the directors have paid off bonds to the extent of 50,000l. The funds to do this have been obtained as follows:—A call of 1l. per share on July 1 realised 24,419l.; calls paid in advance, 12,077l.; properties sold, 5156l. 16s. 2d.; interest, 89l. 6s. 5d.; amount transferred from general account in accordance with agreement with debenture-holders, 39,630l. 13s. 1d.; total, 81,372l. 15s. 8d. Less interest on debentures, 23,810l. 3s.; property purchased, 960l.; interest on calls paid in advance, 256l. 18s. 6d.; bankers' commission, 17l. 17s.; total, 25,044l. 18s. 6d. Debentures redeemed, 50,000l.; leaving 6327l. 17s. 2d. to credit of fund. The report adds that all the company's collieries have been at work during the year, the output having been over 1,090,000 tons, which was rather more than the previous year. Work at the company's Lever Collieries had been retarded, owing to a slip in the canal bank, and short time at some of the other collieries through slackness of trade, had caused the quantities to stand at the above figure, which under other circumstances would have been considerably exceeded. The business done during the year was less than in the previous one, the sales during the summer months going down to a very low point, consequent upon the long hot season, when very little coal was required for household purposes. The company's collieries can now supply about 1,100,000 tons per annum of, on the whole, rather better coal of all classes than at any time since the formation of the company, and the directors do not think it will be of any advantage to try and exceed the above output, but instead to look forward to an improved selling price. During the year the directors have completed their negotiations with the Earl of Bradford for a lease of a portion of his mines in Great Lever, which mines can be worked by the company's existing Fogg's Colliery. Every economy has been exercised consistent with keeping the collieries in a proper state of efficiency, and the works and machinery, both on the surface and below ground, have been maintained out of the year's revenue in good order and repair. The property and assets of the company are set down in the balance-sheet as amounting to 1,214,306l. 5s. 8d.

SPRING FINDING IN BATAVIA.—The *Allgemeine Zeitung* gives some interesting particulars of remarkable success in indicating the presence of water springs on the part of a man named Baraz, who seems to be a recognised authority in such matters. The scene of his performances was in the Bavarian highlands, at a height of more than 1300 ft. above the level of the sea. The commune of Rothenbergh, near Hirschorn, suffered greatly from want of water, and invited Baraz last autumn to endeavour to find some sources of supply for them. He inspected the locality one afternoon in presence of the public authorities and a reporter of the *Allgemeine Zeitung*, and announced that water was to be found in certain spots at depths which he stated. The first spot was in the lower village, and he gave the likely depth at between 62 ft. and 72 ft., adding that the volume of water which the spring would give would be of about the diameter of 1½ in. After incessant labour for four weeks, consisting mainly of rock blasting, the workmen came on a copious spring of water at a depth of almost 67 ft. What he declared about a water source for the upper village was very singular. He pointed to a spot where he said three water-courses lay perpendicularly under one another, and running in parallel courses. The first would be found at a depth of between 22½ ft. and 26 ft., of about the size of a wheat straw, and running in the direction from south-east to north-west. The second lay about 42 ft. deep, was of about the size of a thick quill, and ran in the same direction. The third, he said, lay at a depth of about 56 ft., running in the same direction, and as large as a man's little finger. The actual results were as follows:—The first water-course was struck at a depth of 27½ ft., running in the direction indicated, and having a diameter of one-fifth of an inch. The workmen came on the second at a depth of 42-2-3 ft.; it had a diameter of 7-25ths of an inch. The third was found at 62½ ft. below the surface, and having a diameter of 3-5ths of an inch—all three running in the direction Baraz had indicated. Unfortunately no hint is given of his method of procedure.

EXPERIMENTS WITH IRON.—A series of experiments on the structural changes and crystallisation of iron has been made by Mr. John Collett, State Geologist of Indiana. He found that the continued and repeated vibration of several railroad bridges, caused by heavy trains passing over them, had produced crystallisation in the best malleable bar iron used in their construction, in some places to such an extent that disaster was imminent at any time. He has forwarded specimens to the Stevens Institute of Technology. At this institute, however, it appears that Professor Thurston has for many years been experimenting in the Department of Engineering in the same line, and has made important discoveries with the aid of what is known as an autographic, recording, testing machine. When a piece of metal is broken, a pencil diagram is perfected which exhibits clearly and accurately the strength, elasticity, ductility, elastic limit, and shock-resisting quality of the metal tested. It was quickly discovered that the elastic limit of any metal—that is, the strain at which it begins to yield under gradually-increasing loads—becomes greater after loads less than the breaking load have been temporarily applied and the piece thus perceptibly strained. By repeated applications of increasing loads it was found that the elastic limit could be brought up nearly, if not quite, to the limit at which rupture occurs. Some industrial processes, like cold rolling, produce a like effect.

NORTHERN MINNESOTA is excited by gold finds, which, while grossly exaggerated, appear really, from private advices at hand, to have some merit. Land, absolutely valueless for agricultural purposes, is held at enormous figures, and a good deal of apparently barren rock is claimed to run hundreds of dollars in gold and silver. On the other hand, there is some really good gold quartz, which is stimulating a good deal of blind buying. What there is in the new district can only be ascertained in the spring.—*Engineering Journal* (New York).

## Registration of New Companies.

The following joint-stock companies have been duly registered:—

LANCASHIRE AND YORKSHIRE AUTOMATIC FEEDER.—Capital 60,000l., in shares of 1l. To carry into effect an agreement made between the automatic Feeder (Limited) and this company, and to purchase patent rights and trade marks to manufacture machinery and other appliances, and to acquire by purchase or lease any lands. The subscribers (who take one share each) are—Col. H. S. Anderson, Junior Army and Navy Club; O. R. Mason, Robert-street, Chelsea; Col. H. E. Glass, Upper Norwood; H. Webb, 20, Bucklersbury; A. Marsden, 167, Kennington-road; G. D. Webb, Worple-road, Mortlake; F. W. Webb, Watford.

SHIPS IRONMONGERY COMPANY.—Capital 2000l., in shares of 1l. To carry on in Liverpool and elsewhere the business of engineers, metal workers, hard and soft wares, &c. The subscribers (who take one share each) are—Jos. Heathcock, 9, James-street; Wm. Minton, Albert Buildings; Thos. Redding, Present-row; J. O'Brien, 39, South Castle-street; B. Davies, Sir Howard-street; H. Dobson, Cable-street; J. M. Jepson, New Brighton.

POINT OF AYR COLLIERIES.—Capital 50,000l., in shares of 100l. To acquire by purchase, or otherwise, the colliery and premises mentioned in the agreement made between George Batters, and Daniel Norris on behalf of the company, and to acquire any other lands, &c. To work, raise, win, and get coal, iron, or other metals. The subscribers (who take one share each) are—J. Batters, Stanstead Abbots; F. B. Cosbe, Abchurch-yard; J. G. Vates, Mowbray-road, N.W.; E. E. Probert, Lloyd-square; W. H. Foy, Albert-square; C. C. Baker, Austinfriars; Michael F. Dormer, 58, Lombard-street.

THE VERA COMPANY.—Capital 100,000l., in shares of 10l. To purchase, or otherwise acquire and work mines, minerals, and mining rights, lands, &c., in the kingdom of Spain, or elsewhere, and any plant, machinery, stock, and effects used in such mines. To search for, get, raise silver, lead, copper, iron, &c. The subscribers (who take one share each) are—Edward S. Jones, 30, St. Swinith-lane; H. C. Jones, 144, Leadenhall-street; Robert C. Stevens, 24, Coleman-street; Frank Irwin, Villiers-street; William Irvine, Harlesdon House, Harlesdon, N.W.; Edward Cooper, 104, Vauxhall Bridge-road, and Charles Irvine.

IMPERIAL GALVANISED IRON COMPANY.—Capital 20,000l., in 20l. shares. To purchase or otherwise acquire the lease, plant, machinery, business, goodwill, &c., belonging to Newell Melbourn, Frederick Clinch, and William J. Minnis, carrying on business in partnership as the Imperial Galvanised Iron Company, at Wednesfield, in the county of Stafford, and to carry on the business of the manufacture of corrugated roofing, &c. The subscribers (who take one share each) are—N. Melbourn, Fellingham; F. Clinch, Lincoln; Wm. J. Minnis, Wednesfield; A. A. Towett, Hawthorn Lodge, Sheffield; Thos. W. Hind, Nottingham; Thos. Minnis, Heathtown; John Cowley, Tower Buildings, Liverpool.

NEW ALBION GOLD MINING COMPANY.—Capital 60,000l., in shares of 1l. To purchase, lease, or otherwise acquire, lands, whether or not for mining purposes, gold mines, mining rights, situate in Nova Scotia or elsewhere, and to carry into effect an agreement made between Mr. Rees-Day and Mr. John F. Lund for the company. To explore, work, and develop any mineral and timber resources of the properties so purchased. The subscribers (who take one share each) are—Thos. F. Wood, Tachbrook-street, S.E.; R. C. Sharnall, 98, Mare-street, Hackney; Walter Bain, 169, Albany-road, S.E.; F. J. Warner, 417, Bishopsgate; Arthur D. Fogg, South Norwood Park; S. Peffani, 10, Union-court; John Dare, 16, Bishopsgate-street.

WILLIAM HARTLEY AND SONS.—Capital 100,000l., in 10l. shares. To carry out an agreement made between Wm. Hartley, the elder, Wm. Hartley, the younger, and Thomas Battersby Hartley, of the one part, and Charles Henry Wade of the other part, for the purchase of the cotton mills, weaving sheds, warehouses, freehold and leasehold lands, and the premises at Heywood, with the goodwill, trade marks, patent rights, plant, &c. The subscribers (who take one share each) are—Wm. Hartley, sen., Heywood; Wm. Hartley, jun., Heywood; Thomas Battersby Hartley, Heywood; Richard Hartley, Knutsford; Robert Hartley, Southport; Martha Hartley, Heywood; Esther A. Hartley, Heywood.

CONSOLIDATED CHINA-CLAY COMPANY.—Capital 30,000l., in shares of 10l. To carry on the business of mining and trading in china-clay, china-stone, potters' clay, or any other clays; and mining and trading in any metals or mineral, and to purchase any property suitable for the purposes of the company. The subscribers (who take one share each) are—H. A. Herbert, Killarney; Hon. R. Dawson, Ennismore Gardens; Cecil F. J. Jennings, 97, Cannon-street; M. E. Jobling, 19, Scarsdale Villas; B. G. Lake, 10, New-square, Lincoln's Inn; Geo. E. Lake, 10, New-square; Chas. B. Dalton, Highgate.

DISRAELI MINE SYNDICATE COMPANY.—Capital 80,000l., in shares of 1l. To acquire and work certain mines and mining rights in the colony of Queensland, known as the Disraeli Mine, and to carry into effect an agreement made between Robert McIlwraith of the first part, and William Pritchard Morgan of the second part, Edith Stirling of the third part, and Robert McMillan as trustee for the company of the fourth part, and to purchase, lease, in any of the colonies, mines of gold, platinum, silver, lead, &c. The subscribers (who take one share each) are—W. Pritchard-Morgan, 1, Queen Victoria-street; R. W. Stuart, 1, Queen Victoria-street; J. Manuel, 16, Throgmorton Avenue; Robert McIlwraith, 138, Leadenhall-street; F. R. Knollys, 55, Belgrave-road; H. W. Stickland, Tooting Common; A. L. Tottenham, M.P., Glenfarm Hall, County Leitrim.

ANGLO-ROUMANIAN PRESERVED MEAT AND PRODUCE COMPANY.—Capital 100,000l., in shares of 5l. To carry on in the kingdom of Roumania, or elsewhere, the manufacture of preserved meats, extracts, &c., and to carry into effect an agreement made between Maurice Bauer, of the one part, and Fred. Hocherly of the other part. The subscribers (who take one share each) are—C. Heaven, 6, Great St. Helen's; W. A. Baltusly, 12, Paternoster Buildings; J. Da Silva, 12, Paternoster Buildings; A. F. Link, 8, Union-court; C. Beddard, 23, Cornhill; C. Carter, 12, Moorgate-street; Herbert S. Heaven, 6, Great St. Helen's.

COPPER QUEEN UNITED.—Capital 350,000l., in shares of 2l. To carry into effect an agreement made between Richard L. Ogden of the first part, James J. Browne of the second part, and Francis Hutley on behalf of the company, for acquiring and working certain mining property known as the Copper Queen and Rucker, situate in the town of Bisbee, in Arizona, U. S. America; also to purchase any other mines, &c., in the U. S. of America, and to work and develop the mines and other properties of the company. The subscribers (who take one share each) are—T. E. Williams, Stockwell-road; S. George Hinton, 162, High-street, Poplar; Wm. J. Thomas, Bedford-road, Tottenham; Thomas G. Shardon, Chestnut Grove, Balham; G. Saies, Lee-street, Bow; H. C. M. Daniel, 34, Elgin Crescent, Notting Hill; E. Harvey, 14, Bedford-road, Tottenham.

LITTLEBOROUGH DYEING COMPANY.—Capital 35,000l., in shares of 50l. To acquire by purchase from the liquidator of the Calderbrook (Stansfield) Printing and Bleaching Company (Limited), the lessee's interest in print and bleach works, buildings, and premises situate at Stansfield, and to erect on such land any buildings, thereon, and to acquire by purchase machinery to carry on the business of dyeing, printing, bleaching, &c. The subscribers (who take one share each) are—James Heap, Rochdale; R. Haus, Royton; W. Jones, Melvern, Rochdale; P. C. Gorton, Kennedy-street, Manchester; J. S. Jones Saville, Strand; J. H. Mather, Chadderton, and R. E. Turner Haugh, Rochdale.

HOLLOWAY'S PILLS—EASY DIGESTION.—These admirable pills can be too highly appreciated for the wholesome power they exert over all disorders of the stomach, liver, bowels, and kidneys. They instantaneously relieve and steadily work out a thorough cure, and in its course dispel headache, biliousness, flatulence, and depression of spirits. It is wonderful to watch the daily improvement of the complexion, as Holloway's pills purify the blood and restore plumpness to the face which had lost both flesh and colour. These pills combine every excellence desirable in a domestic remedy. The most certain and beneficial results flow from the occasional use of this regulating medicine; even persons in health, or when following sedentary occupation, will find it an invaluable agent.



## GOLD DISCOVERIES v. FREE TRADE.

The supporters of free trade are more or less disposed to evade the consideration of the relative importance of free trade itself in increasing British commerce, and that of the extraordinary discoveries of gold which took place shortly after free trade was inaugurated. Some facts connected with this matter may be studied with advantage. Free trade was established in this country in 1846. At that time the value of the annual exports was 60,000,000. They had ranged at about that figure for some years previously, and although the period was one of depression and of commercial disaster, no very great difference had been caused in the amount of the exports, which in 1845 were the same as they were in subsequent years up to 1848. In the latter year the discovery of the valuable gold deposits in California took place. A new epoch commenced, and the excitement consequent upon the prospect of such an increase in the gold supply resembled that produced by the conquests of the Spaniards in America in the 16th century. It was some time before the full effect of the new discoveries was felt, and in 1851 the surprise which had been caused by the discovery of gold in California was repeated by further and more valuable discoveries in Australia. From this moment trade took a bound. In 1852 our exports were 78,000,000; in 1853, 99,000,000; in 1854, 97,000,000; in 1855, 96,000,000; in 1856, 115,000,000; and in 1857, 122,000,000. It will thus be seen that in the first few years which followed the introduction of free trade into this country no sensible advance was made in its business, but that in the six years which followed the discovery of gold in Australia our exports were more than doubled. In the face of this fact it is rather difficult to understand how the whole increase of our trade can be attributable to the abolition of protection. That measure, however sound it may have been, produced no immediate effect, and it gave no indications of making any serious change in the trade of the world. No sooner, however, was an increased gold supply brought to light than the whole scene changed. People, not past the middle age, can recollect the excitement which prevailed. Australia, from being a colony in which little interest was taken, and one supposed to be a very good place for a man to go and make money by sheep farming, suddenly became the scene of immense commercial importance. Millions of gold were extracted from it every year, and a large quantity was also received from California. The effect of such an addition to the currency of the world, for that

was what it amounted to, and of the consequent addition to the credit, which is always five times greater than the actual currency, was to cause trade to spring into life in directions which had never been contemplated before. No doubt for a time business was overdone, and the panic of 1857 was perhaps the direct result of the over-stimulus which had been created by the enormous increase in the circulating medium. But it is rather strange to be told that this increased activity, which as we have shown was directly traceable to the discovery of gold, should be attributed entirely to the adoption of free trade by this country. It is, of course, quite possible that our policy of free trade, acting concurrently with the increase in the gold supply, which is after all the basis of trade, may have produced advantageous results by increasing the business of the world. This, so far, is pure hypothesis. There is nothing to show us that trade would not have gone on in the same degree had protection, or, at any rate, a moderate protection, been in force. We cannot help thinking that thick-and-thin advocates of free trade would render more service to the country by drawing a distinction, if they possibly could, between the results produced by the increase of gold and those produced by the abolition of protection than they can ever do by simply sticking to their hard-and-fast lines, and abusing those who differ from them. Statistics prove that during the years from 1851 to 1857 gold to the value of 107,500,000 was added to the European stock. Coming as this did at a period which had long been one of stagnation, it would be difficult to over-estimate the effect of such an increase of the supplies. Credit, currency, trade of all kinds would increase probably in tenfold proportion. With the increased trade, increased facilities were afforded. Banks in some cases recklessly financed merchants and operators who had no means whatever. All these steps combined caused the chief increase in the trade of the world, which has invariably by free traders been attributed to free trade, and free trade alone. We would like these gentlemen to consider this matter from the point of view of the gold supply, and we would ask them to try and determine, if they can, the relative effects produced by the discovery of gold, and those produced by the discovery of our new fiscal policy.—*Fairplay.*

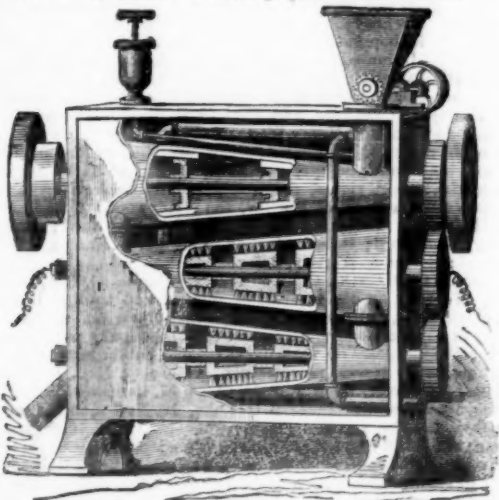
THE RAILWAYS OF THE WORLD.—Some statistics are brought forward by the Minister of Public Works in Germany, in a report entitled "Archiv für Eisenbahnen," from which it appears that at the end of 1879 there were in the whole world 350,031 kilometres

of railways, which by the end of 1883 had increased to 442,199. Of the 92,168 kilometres constructed in that interval the United States are responsible for 56,327, while of the more backward railway-making countries 3727 kilometres were made in Mexico, 2160 in British North America, 2050 in Brazil, 2786 in India, 3603 in Australia, and 1166 in Algeria and Tunis. Of the European States the most active countries in constructing railways during the four years were France, with 4500 kilometres, Germany with 2716, and Austria-Hungary with 2263; while, on the other hand, the countries with the oldest railway systems and the densest populations made comparatively few extensions, Great Britain being only at the rate of 1399 kilometres, Belgium of 237, Holland of 282, and Switzerland of 302. The proportion of new lines to the existing ones during the period was 5 per cent. for Great Britain, 6.1-3rd per cent. for Belgium, 12 for Holland, 12 for Switzerland, 18 for France, 42 for the United States, 67 for Brazil, and 335 per cent. for Mexico. At the close of 1883 the United States was a long way ahead of all other countries in railway mileage, possessing 191,356 kilometres, Germany had 35,800 while France and Great Britain ran a pretty equal race with 29,688 and 29,890 respectively. The smallest railway owner was Greece, which passed but 22 kilometres, though this proportion is now raised by the opening last year of 100 kilometres between Volo and Larissa. If we consider the railway mileage of each country in proportion to every square kilometre of land, we shall find that Belgium comes first with 14.5 kilometres of railway, Great Britain with 9.5, France with 5.6, Germany with 6.6, the smallest European States being Russia and Norway with 0.5. The United States, with all its enormous network, now only figures for 2.1, and Canada for 0.2, while Brazil, the Argentine Republic, Paraguay, Japan, and Queensland are only 0.1 each. But if we view the subject from another standpoint—that of the proportion of the mileage to every 10,000 inhabitants, the position of affairs is singularly reversed. Queensland, which was at the bottom of the world's list in the former instance, now stands at the top with 70.8 kilometres of rail to every 10,000 people, South Australia 66.1, West Australia 49.6, New Zealand 17.7, New South Wales 31.1. The United States show for 16.8, and Canada 29.4. Naturally the European States are very low in the scale in this respect, Great Britain being only 8.5, France and Germany 7.9 each, Belgium 7.7, Holland 6.0, and Russia 3.0. The lowest of all is India with 0.7.

## NOVEL ELECTRO METALLURGICAL MACHINE.

PROFESSOR JAMES MANES AND SONS call the attention of miners, mineowners, capitalists, and others interested in the working of gold or silver mines to their new Electro Metallurgical Machine for extracting fine and rusty gold from sands or tailings of stamp mills, or the sands of hydraulic gold diggings, or from the black sands on the coast of Oregon or California, and other parts of the world where gold is found.

The problem that has long troubled the worker of free-milling gold and silver ores is a method to save the mineral now lost in the tailings of stamp mills or flumes. This alone, if it could be saved, would amount to many million dollars profit each year, besides enabling the working of much territory which is now lying idle for want of an economical and thorough process of treatment.



Prof. James Manes and Sons, of Denver, Colorado, U.S., have invented a machine (represented in the above engraving) which it claimed will save nearly the entire amount of mineral which passes through it, the loss not being over 10 per cent., and in many cases not in excess of half that amount. The machine is a cheap and practical process—it never need stop for charging or cleaning up, being nearly self-acting. Steam, electricity, and mercury are used in the process of extracting the mineral.

This machine or amalgamator is adapted for free-milling gold or silver ores, or refractory after roasting. It consists of a series of three or more large cylinders, wider at one end than the other, placed one above the other in a horizontal position, a shaft or spindle running through the centre of each.

The ore and mercury are fed into the first cylinder, passing into the second, and then to the third. The first cylinder is furnished with steel rollers which nearly touch the sides of the cylinder, and revolve at a good rate of speed, mixing the mercury and ore. The second cylinder is furnished with large steel brushes attached to the shaft or spindle, revolving at a high rate of speed; through this a current of electricity is furnished by a Westinghouse dynamic electro machine, which materially assists in gathering the particles of very fine gold together, and thoroughly amalgamating the metal and mercury. The third cylinder is similarly furnished to the second; into this the amalgam passes, and is again acted upon and mixed by the brushes to catch any gold which might have escaped amalgamation in the second. A fourth cylinder may be used found necessary.

The amalgamated pulp then passes through a revolving copper drum, plated with quicksilver inside. As the drum revolves it takes up the most part of the amalgamated gold. As the inside of the drum is constantly washed with a spray of water from perforated pipes fixed inside of said drum, a clean-plated surface is constantly brought in contact with the pulp or tailings as it passes out from the cylinders. After leaving the drum it falls down on to incline copper plates, the same as is now used in stamp mills.

The amalgam can be collected from the drum and plates without stopping the machine, and any live quicksilver that passes will be caught in syphons. The tailings are carried off with the water. The machine when attached to the flume will be driven by the waste water; it sifts the fine sands from the coarse gravel, and amalgamates it as above.

The specific points claimed by Prof. Manes and Sons in their patent are—

- 1.—The saving of almost all the mineral passing through the machine.
- 2.—The loss being less than 10 per cent.
- 3.—The entire absence of loss of the amalgamated material, thereby saving all the mercury, which, with the processes now in use, there is a large loss both of mercury and the precious metal.
- 4.—The small cost per ton at which the ore can be treated.

By the addition of the powerful current of electricity that passes off the revolving brushes, the most minute particles of gold will be caught and retained, which in the ordinary flume and stamps passes off with the water; this often amounts to a large percentage.

The inventors state that if English stock companies will give their assistance to work the black sands of Oregon and California, by paying for the building of the machines, they will take a share of the gold for their services, or they will send their machines to any part of the world, or will sell patent rights to those desiring any of their patent machines or revolving furnaces for roasting or smelting ores, ball pulverisers, &c.

Prof. James Manes and Sons are agents for the Morey and Spary Ball Pulveriser, that crushes and pulverises at the same time, and does as much work as eight stamps in a day, crushing either wet or dry.

PRINCIPAL OFFICE OF

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No. 372, Glanarm Street, Denver, Colorado,  
U.S.A.

All our machines and furnaces are made by the Colorado Iron Company of Denver, Colorado, the most extensive mining machine works in America.

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ANTI-CORRODING TUBES AND FITTINGS COATED BY BARFF'S RUSTLESS PROCESS.

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Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for

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Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper.

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Being a series of Diagrams showing the Depth, Thickness, and Local Names of the Seams in the principal Collieries of the various districts, with Index, Geological Map, and horizontal sections across the Rnabon, Brymbo, Buckley, and Mostyn districts.

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Every information relative to the progress of lode-tin mining in the Wild River district (termed by geologists "The Cornwall of Australia"), can be obtained by communicating with the undersigned. **CHARLES JENKIN.** "Herberton Advertiser" Office Herberton, September, 1882.



Hadfield's Sheet of Drawings.

List No. 28b.

# HADFIELD'S STEEL FOUNDRY COMPANY,

## ATTERCLIFFE, SHEFFIELD.

GOLD MEDAL.



Gold Medal, Paris, 1878.

Gold Medal, Madrid, 1883.



Contractors to H. M. Home, India, and Colonial Governments; Home, Foreign, and Colonial Railways, Admiralty, War Departments, &c.

GOLD MEDAL.



Gold Medal, Melbourne, 1881.

Special Diploma of Honour and Silver Medal, Sydney, 1880.

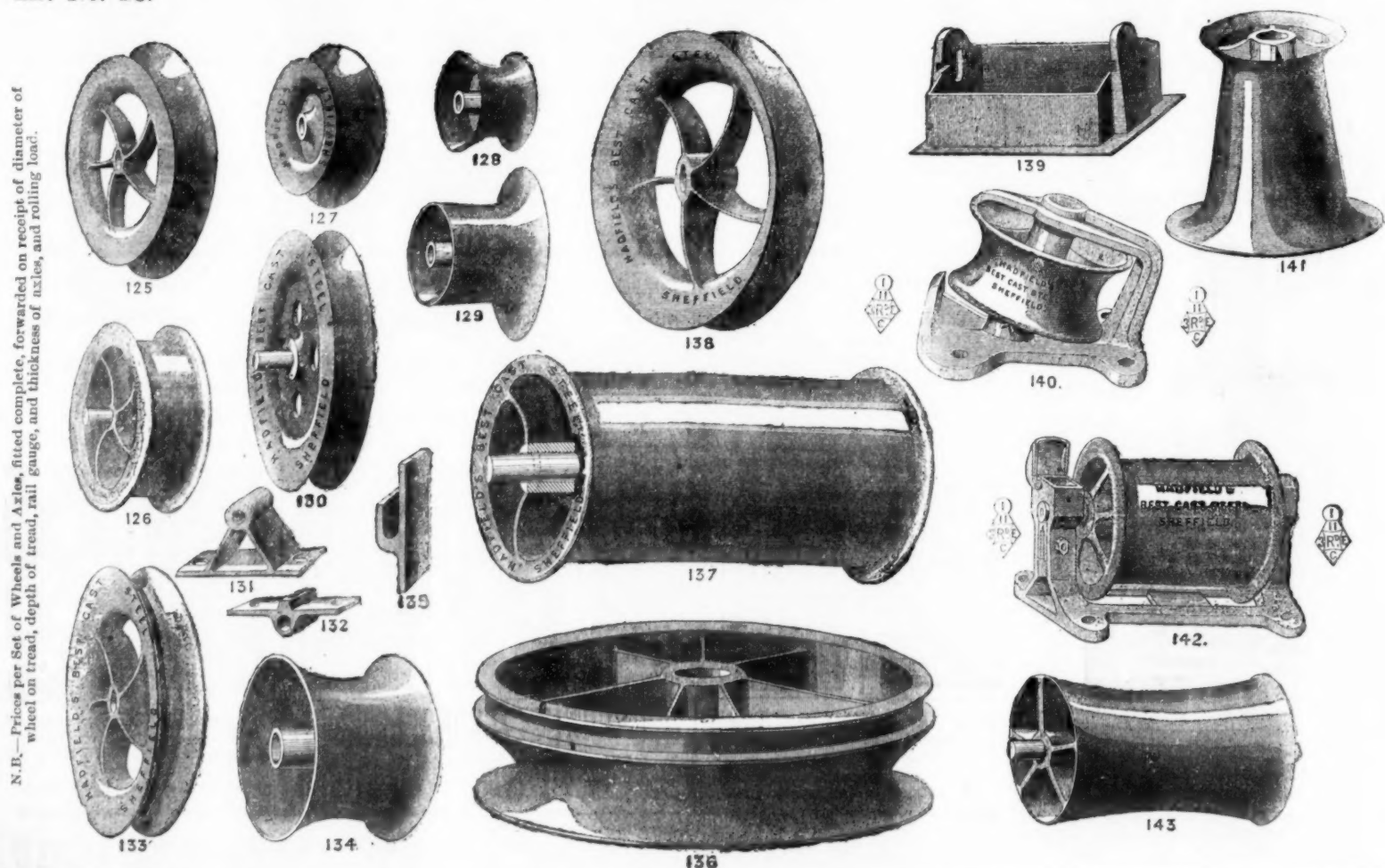
HIGHEST AWARDS, LEEDS, MANCHESTER, WREXHAM, CORNWALL, &amp;c.

## ▷ HADFIELD'S CAST STEEL WHEELS. ◁

One of our departments is specially adapted for the production of our Patent Steel Wheels and Axles for collieries, tramways, ironstone mines, slate quarries, ironworks, lead mines, &c., and we are now manufacturing 2000 per week. Owing to our patent system of fitting-up Wheels and Axles, which is simple but effective, we are enabled to execute orders with promptitude. We undertake to supply all work entrusted to us in a first-class manner, and only manufacture the best quality of material. OVER 1600 DIFFERENT WHEEL, PULLEY, AND PEDESTAL PATTERNS IN STOCK, of varying widths of tread, flanges, &c., any of which can be ready for use at the shortest notice.

In addition to the now universally admitted superiority of Hadfield's steel wheels over those of cast-iron for lightness, strength, and wearing qualities, we claim the following SPECIALITIES for our material over any other steel, malleable iron, or other wheels, viz.:-

Extra TOUGHNESS or TENACITY, DURABILITY, and SOLIDITY; for proof of this kindly see advertisement marked "List No. 28."



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**Rollers, Pulleys, Frames, and Stands.**—See our lists of over 240 different patterns. They possess great durability, lightness, and strength, and add considerably to the life of the steel or other ropes.

**Self-oiling Wheels (Patent).**—Many thousands now at work. Save at least 50 per cent. of oil or grease. Easily charged or refilled. Reduce friction and wear and tear to a minimum.

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Over 1700 different patterns of above in stock, ready for use on the shortest notice. New patterns made to suit special requirements free of charge for quantities.

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**Note.**—Beware of spurious and cheap imitations which eventually work loose, causing great loss and annoyance, as well as bringing discredit on the name of Steel Wheels and Axles. We are constantly replacing such. See, therefore, that Hadfield's name is on every wheel.

N.B.—Note the Address, and prove truth of the above by giving our Steel Wheels, &c., a trial.

### HADFIELD'S STEEL FOUNDRY COMPANY, HECLA WORKS, ATTERCLIFFE, SHEFFIELD.

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The California pattern of Gold Stamp Mill is universally accepted as the most perfect, economic, and efficient made.

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Of the most approved German pattern and arrangement, or with Stamps and Frue Vanner Concentrators for low grade silver ores, light in lead. We have over 20 large German pattern mills at work on lead, zinc, or copper ores, and numerous Vanner mills on ores never before successfully concentrated.

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We have 80 Water Jacket Smelting Furnaces in use from 20 in. circular up to 54 in. by 60 in. for lead and silver smelting; and special High Jacket Furnaces for copper ores.

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Correspondence solicited. Descriptive Circulars and Catalogues on application

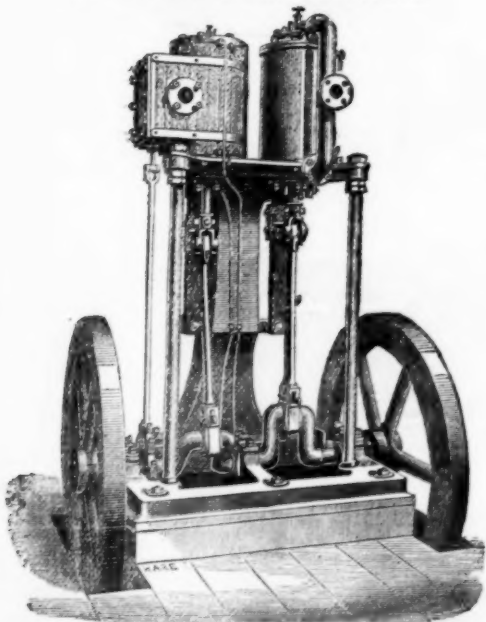
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Several of these Air-compressors, ranging from 3½ to 12 tons in weight may be seen in constant work in the Camborne Mining District.

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SHEAF WORKS, AND SPRING WORKS, SHEFFIELD.

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This unrivalled Explosive, as manufactured by the New and Perfected Machinery of the Company, is perfectly safe for transit, storage, and use, and is employed in every description of Mining or Quarrying Work, for Tunnelling, Pit Sinking, Engineering Work, and Submarine Operations, with the most complete success and satisfaction.

Potentite does NOT contain its own MEANS OF IGNITION, is free from Nitro-Glycerine, and its SAFETY has been specially demonstrated by public experiments.

Its strength is unequalled.

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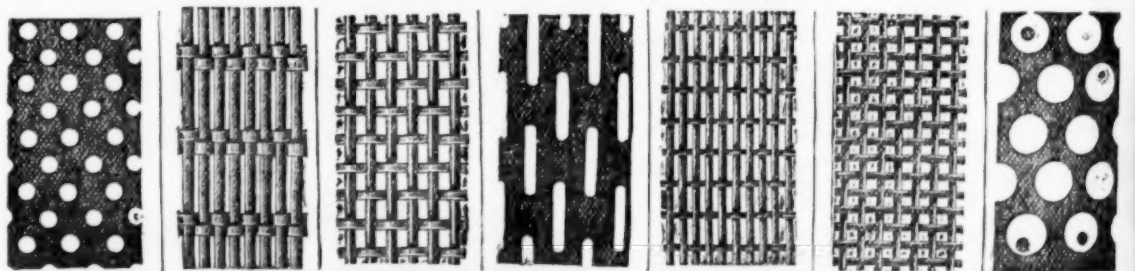
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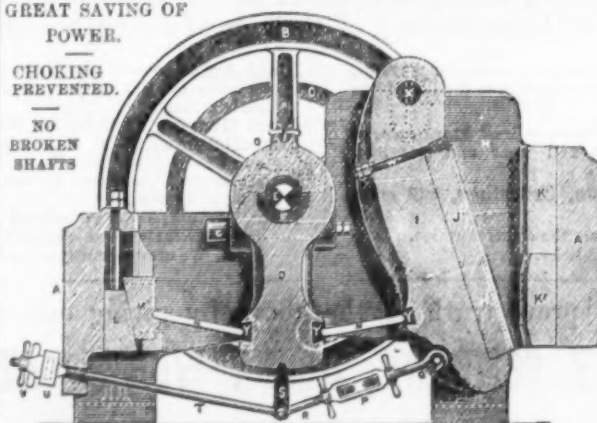
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GREAT SAVING OF  
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SHAFTS



PATENTEES AND SOLE MAKERS  
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Patent Improved  
Blake Stonebreakers  
and Ore Crushers,

With PATENT DRAW-BACK MOTION,

WHICH DISPENSES WITH ALL SPRINGS.  
JAWS adaptable either for CUBING or CRUSHING  
Reversible in Three Sections, with Surfaced Backs.  
Steel Toggle Cushions.

PRICES, PARTICULARS, AND TESTIMONIALS ON  
APPLICATION.



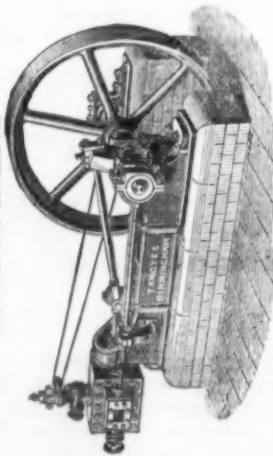
LONDON: 35, Queen Victoria Street.

NEWCASTLE: St. Nicholas Buildings.

MANCHESTER: Deansgate.

GLASGOW: Argyle and Hope Streets.

TANGYES' "BELFAST" STEAM ENGINE, WITH PATENT GOVERNOR.



The Engine is self-contained on strong bed plate, has wrought-iron low crank shaft machined all over, and working in long gun-metal bearings, steel cross head piston rod, and valve spindle, wrought-iron connecting rod and gun-metal adjustable bearings, cylinder steam jacketed, and lagged with sheet steel.

Expansion gear on Meyer's system with hand wheel at back of cylinder for varying grade of expansion while Engine is running.

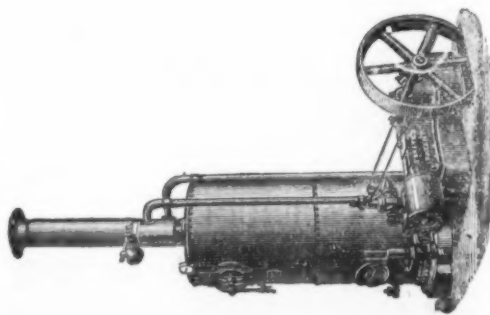
Tangyes' patent Governor with equilibrium eccentric throttle and stop valve.

Nominal Horse Power	10	14	16
Diam. Steam Cylinder	10	12	13
Length Stroke	18	24	24
Revolutions per Minute	130	125	125
Price of Engine	£ 120	£ 142	£ 155
Variable Expansion Gear	extra	extra	extra
Holding-down Bolts and Plates	4	13	19
Diam. Fly-wheel	65	72	84
Width Face, turned	8	9	9
Diam. Steam Inlet	2	2 1/2	3
Weight Engine and Fly-wheel	50	72	75
Weight Fly-wheel only	15	22	24

Feed Pump, not included.

12

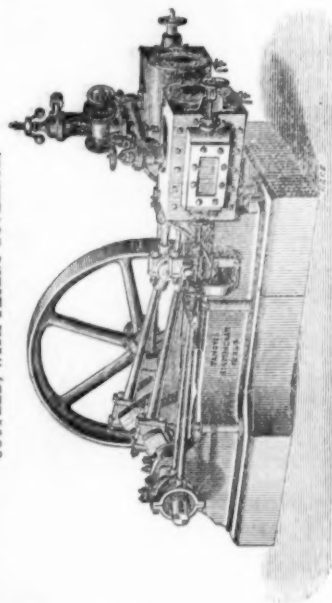
TANGYES' "SOHO" STEAM ENGINE, WITH VERTICAL BOILER, And Patent Governor.



Nominal Horse Power	3	4	6	8	10	12	14
Diam. Steam Cyl.	5	6 1/2	8	9	10	11 1/2	12
Revolutions per Minute	240	192	160	150	150	130	120
Price of Engine and Boiler on Lg. Base with Feed Pump, &c.	£ 68	£ 86	£ 105	£ 118	£ 172	£ 220	£ 235
Diam. Fly-wheel	30	35	40	40	50	54	60
Width Face, turned	24	32	41	41	70	80	95
Weight	24	32	41	41	70	80	95

13

TANGYES' "BELFAST" STEAM ENGINE, COUPLED, WITH PATENT GOVERNOR.



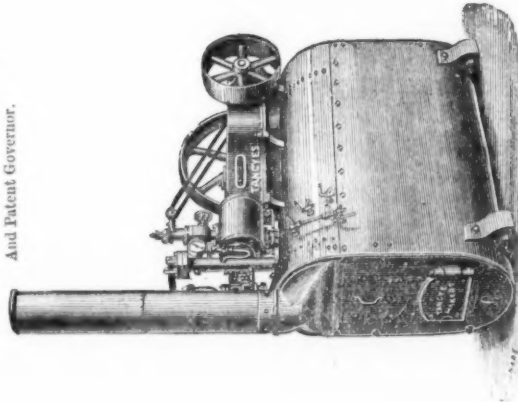
The Illustration represents a pair of the Engines described on previous page. In the Coupled Engines the Crank Shaft works in three long gun-metal bearings, each bearing being in three parts, with wedge adjustment.

Nominal Horse Power	20	28	32
Diam. Steam Cylinders	10	12	13
Length Stroke	18	24	24
Revolutions per Minute	130	125	125
Price of Pair Engines	£ 240	£ 284	£ 310
Variable Expansion Gear	extra	extra	extra
Holding-down Bolts and Plates	8	12	12
Diam. Fly-wheel, in halves	65	84	90
Width Face, turned	8	9	10
Diam. Steam Inlet	3	3 1/2	4
Weight Engine and Fly-wheel	93	140	150
Weight Fly-wheel only	16	24	30

Feed Pump, not included.

13

TANGYES' "SOHO" STEAM ENGINE, WITH "COLONIAL" TUBULAR BOILER, And Patent Governor.

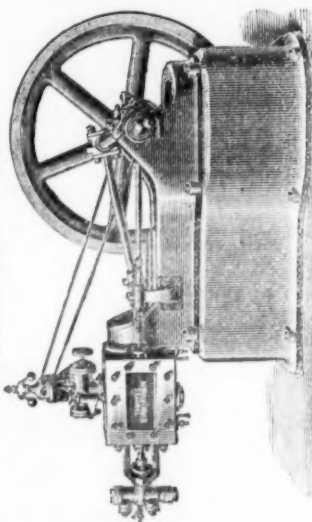


Nominal H.P. of Engine	3	4	6	8	10	12	14
Diam. Steam Cylinder	5	6 1/2	8	9	10	11 1/2	12
Revolutions per Minute	240	192	160	150	150	130	120
Price of Engine and Boiler with Fly-wheel, &c.	£ 75	£ 90	£ 113	£ 130	£ 193	£ 210	£ 242
Diam. Fly-wheel	30	35	40	40	50	54	60
Width Face, turned	24	32	41	41	70	80	95
Length and Width of Boiler	60 x 24	66 x 27	80 x 30	132 x 33	144 x 36	156 x 39	168 x 42
Heating surface of Boiler	43	65	114	200	240	240	280

Pulley on Fly-wheel Shaft, extra.

17

TANGYES' "COLONIAL" STEAM ENGINE, WITH PATENT GOVERNOR.



The speed of the Engine can be increased or reduced by simply tightening or releasing the cap which forms the top of the Governor.

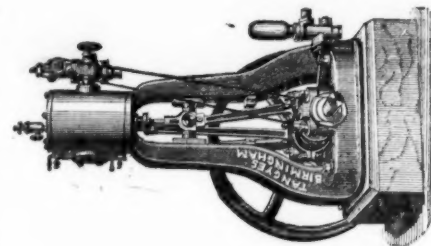
The Fly-wheel can be put on either end of Fly-wheel Shaft.

Nominal Horse Power	4	6
Diam. Steam Cylinder	ins.	ins.
Length Stroke	12	150
Revolutions per minute	37	65
Price of Engine	£ 20	extra
Variable Expansion Gear	extra	extra
Holding-down bolts and plates	48	5
Diam. Fly-wheel	ins.	ins.
Width Face, turned	2 1/2	2 1/2
Diam. Fly-wheel Shaft	1 1/4	1 1/4
Length	2	1 1/2
Diam. Steam Inlet	1 1/2	1 1/2
Exhaust Outlet	1 1/2	1 1/2
Weight Engine and Fly-wheel	16	16
Weight Fly-wheel only	6	6

Cast-iron Base shown in illustration, extra.

14

TANGYES' VERTICAL STEAM ENGINE, DOUBLE STANDARD, WITH PATENT GOVERNOR.

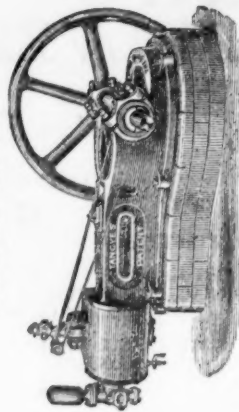


Nominal Horse Power	4	6	8	10	12	14
Diam. Steam Cylinder	ins.	ins.	ins.	ins.	ins.	ins.
Revolutions per Minute	190	180	180	150	150	130
Price of Engine	£ 34	£ 45	£ 55	£ 70	£ 88	£ 100
Variable Expansion Gear	extra	extra	extra	extra	extra	extra
Holding-down Bolts & Plates	20	20	20	20	20	20
Diam. Fly-wheel	35	40	40	50	54	60
Width Face, turned	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Diam. Steam Inlet	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Exhaust Outlet	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Weight Eng. & Fly-wheel	8 1/2	13 1/2	14 1/2	24 1/2	27 1/2	36 1/2

NOTE.—With each Engine is supplied a Zinc Foundation Template and Oil Catches.

20

TANGYES' "SOHO" STEAM ENGINE, WITH PATENT GOVERNOR.



The speed of the Engine can be increased or reduced by simply tightening or releasing the cap which forms the top of the Governor.

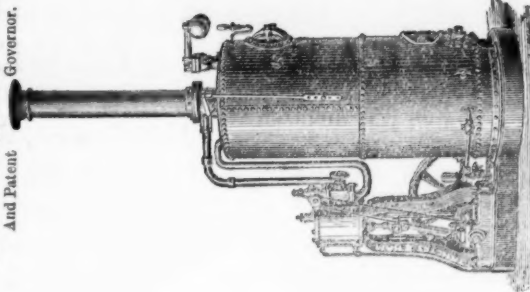
The Fly-wheel can be put on either end of Fly-wheel Shaft.

Nominal Horse Power	3	4	6	8	10	12	14
Diam. Steam Cylinder	ins.	ins.	ins.	ins.	ins.	ins.	ins.
Revolutions per Minute	240	192	180	150	150	130	120
Price of Engine	£ 25	£ 33	£ 42	£ 52	£ 68	£ 83	£ 95
Variable Expansion Gear	extra	extra	extra	extra	extra	extra	extra
Holding-down Bolts & Plates	1 1/2	20	25	25	40	40	50
Diam. Fly-wheel	ins.	ins.	ins.	ins.	ins.	ins.	ins.
Width Face, turned	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Diam. Fly-wheel Shaft	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
Length	2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Diam. Steam Inlet	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Exhaust Outlet	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Weight Engine and Fly-wheel	16	16	16	16	16	16	16
Weight Fly-wheel only	6	6	6	6	6	6	6

NOTE.—With each Engine is supplied a Zinc Foundation Template and Oil Catcher.

15

TANGYES' VERTICAL STEAM ENGINE, DOUBLE STANDARD, WITH VERTICAL BOILER And Patent Governor.



Nominal Horse Power	4	6	8	10	12	14
Diam. Steam Cylinder	ins.	ins.	ins.	ins.	ins.	ins.
Revolutions per Minute	190	180	180	150	150	130
Price of Engine	£ 34	£ 45	£ 55	£ 70	£ 88	£ 100
Variable Expansion Gear	extra	extra	extra	extra	extra	extra
Holding-down Bolts & Plates	20	20	20	20	20	20
Diam. Fly-wheel	35	40	40	50	54	60
Width Face, turned	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
Diam. Steam Inlet	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Exhaust Outlet	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
Weight Eng. & Fly-wheel	8 1/2	13 1/2	14 1/2	24 1/2	27 1/2	36 1/2

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21



## THE BLAKE-MARSDEN NEW PATENT IMPROVED STONE BREAKERS AND ORE CRUSHERS.

ORIGINAL PATENTEE  
AND ONLY MAKERALSO PATENTEE AND ONLY  
MAKER OF THE**H. R. MARSDEN,**  
**NEW PATENT FINE CRUSHER OR PULVERIZER,**

FOR REDUCING TO AN IMPALPABLE POWDER, OR ANY DEGREE OF FINENESS REQUIRED.

**GOLD QUARTZ, SILVER, COPPER, TIN, ZINC, LEAD.**

AND ORES OF EVERY DESCRIPTION

PATENT REVERSIBLE CURING and CRUSHING  
JAWS, IN FOUR SECTIONS.WITH PATENT FACED BACKS, REQUIRING  
NO WHITE METAL IN FIXING.CRUCIBLE CAST-STEEL CONNECTING RODS.  
RENEWABLE TOGGLE CUSHIONS, &c.**OVER 4000 IN USE.**EXTRACTS FROM TESTIMONIALS.  
PULVERIZER.

"I have great pleasure in bearing testimony to the merits and capabilities of your patent combined fine crusher and sieving apparatus. I have tried it on a variety of ores and minerals, and it pulverizes them with equal success. You can put in a small paving stone and bring it out like flour."

"In reply to your favour, I have much pleasure in informing you that the 12x3 Pulverizer we had from you is giving us every satisfaction. The material we are operating on is an exceptionally hard one. I am well satisfied with its working."

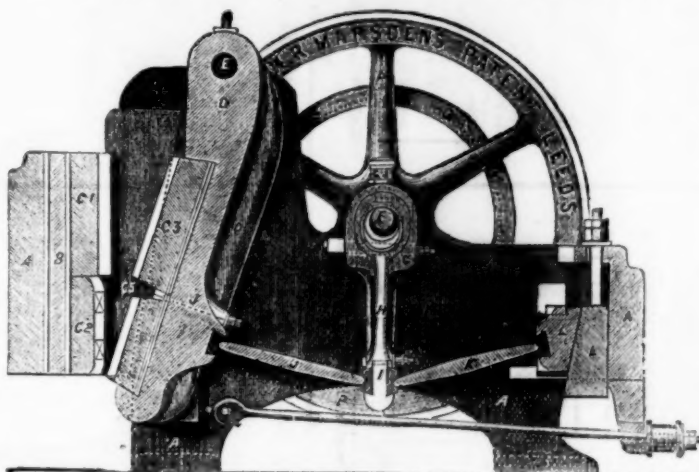
"Our experience is that the motion and mechanical arrangements of your machine are the best for pulverizing that we have ever met with."

"The reports from our mines as regards the working of your Fine Crusher (20x5) recently supplied are very favourable, although we cannot quote you exact figures. On being got into position it was tried by hand, with the result that it made short work of the biggest pieces of ore we put into the hopper. You might say how long you would take to deliver another of the same size."

"As I once before stated, your machine is a perfect pulverizer."

"I am sure the machine will be a success, and a great one, and there is any amount of demand for such a machine. We can work it with 20 lbs. of steam, and our engine, which is a 12-h.p., plays with the work, in fact we run the Stonebreaker and the Pulverizer both together with 35 lbs."

Also Cement, Barytes, Limestone, Chalk, Pyrites, Coprolite, &c., &c. These Machines are in successful operation in this country and abroad, and reference to users can be had on application.



GREATLY REDUCED PRICES ON APPLICATION.

FOR CATALOGUES, TESTIMONIALS, &c., APPLY TO THE SOLE MAKER,  
**H. R. MARSDEN, SOHO FOUNDRY, LEEDS.**

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FIRST-CLASS GOLD AND SILVER MEDALS.

ADOPTED BY THE PRINCIPAL CORPORATIONS, CONTRACTORS, MINING COMPANIES, &amp;c., IN ALL PARTS OF THE WORLD.

ROAD METAL BROKEN EQUAL TO HAND, AT ONE-TENTH THE COST.

## EXTRACTS FROM TESTIMONIALS.—STONEBREAKER.

"I now order Three of your Stone Crushers, size 15 x 10, to be of your very best construction, and to include two extra sets of Jaws and Cheeks for each. The last two 24 x 13 machines you sent me, which are at work in this colony, are doing very well. You will soon find that the railway contractors will adopt your machines in preference to the colonial ones—two of which I have. I know other contractors have had as many as nine of them, which have not given very good satisfaction. Once they know of yours thoroughly, I believe you will do a good trade with the colonies. For reference of the high character of your constructions you can refer to me as having used them with the very best results, both in New Zealand and this colony, and much prefer them to the colonial article, both in point of construction and less liability to go out of order. The material we are crushing is very hard blue stone, for railway ballast purposes. Push on with the order as quickly as possible; I do not think it necessary to have any engineering inspection. I have brought your machines prominently under the notice of all large contractors in this colony, likewise the Government. Many of the contractors have spoken to me in reference to their capabilities, and I could only tell them that they are by far and away the best and most economical I ever used. The very fact of me having purchased now Eleven from you at various intervals and various sizes, and over above 12 years ago, and having tried all the other makers, is sufficient guarantee of the capabilities and the working of your machines. Yours in every way surpass all others."

"Some of your testimonials do not give your machines half their due. I have seen men hammering away on a big rock for a quarter of a day which your machine would reduce to the required size in a quarter of a minute. I would guarantee that your largest size machine would reduce more of the Cornish tin capels (which is the hardest rock of England) in a day than 200 men, and at 1-25th the cost."

**JOHN CAMERON'S**

FLY-WHEELS ON BOTH SIDES.

SPECIALITIES ARE HIS

**STEAM PUMPS**

FOR

**COLLIERY PURPOSES.**

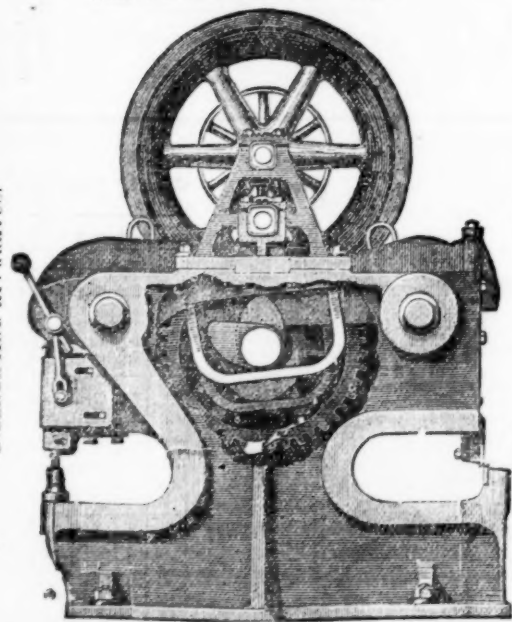
Specially adapted for forcing Water any height

ALSO, FOR

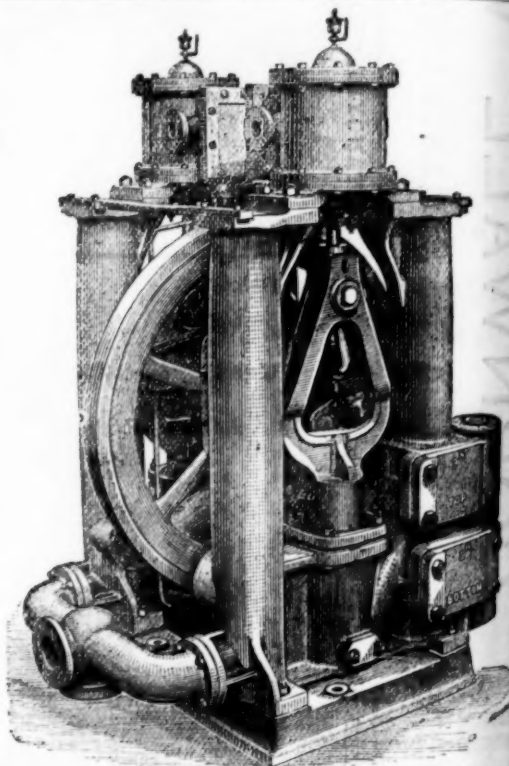
**SINKING, FEEDING BOILERS AND STEAM  
FIRE ENGINES.**

Of which he has made over 9000.

ALSO, HIS

**PATENT CAM AND LEVER  
PUNCHING AND SHEARING MACHINES.**Works: Oldfield Road, Salford,  
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For NEWCASTLE and EAST COAST—E. BECKWITH AND CO.,  
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D-SENGING APPARATUS.



By a special method of preparation this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

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LEATHER MILL BAND AND ROSE PIPE MANUFACTURERS,  
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MILL BANDS, ROSE, AND LEATHER FOR MACHINERY PURPOSES.**SOLID DRAWN BRASS AND COPPER  
BOILER TUBES**

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MANUFACTURERS OF

**Lapwelded & Buttwelded Wrought-iron, Steel, or Homogeneous Tubes**

FOR EVERY

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**CRANE, INCLINE, AND PIT CHAINS,**Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADERS,  
FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,  
RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions

**WELDED STEEL CHAINS { FOR CRANES, INCLINES, MINES, &c.,  
MADE ALL SIZES.**